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AN EXPERIMENTAL APPROACH TO THE DISPLAY OF NORMAL LINGUISTIC COMPETENCE.

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TWENTY-EIGHT SS (SUBJECTS) WERE PRESENTED WITH COMPUTER-GENERATED AGRAMMATICAL STATEMENTS, AND ASKED TO CARRY OUT TWO TASKS ON EACH OF TWO EXPERIMENTAL DAYS. TASK 1 WAS A FORCED-CHOICE EXPERIMENT IN WHICH 50 PAIRS OF STATEMENTS WERE PRESENTED AURALLY TO EACH S, WHO HAD TO SELECT THAT MEMBER OF THE PAIR WHICH HE FELT WAS THE BEST APPROXIMATION TO A GOOD ENGLISH SENTENCE. IN TASK 2, SS WERE REQUIRED TO READ AND RANK EACH STATEMENT ON A SCALE RUNNING FROM ONE (COMPLETELY UNACCEPTABLE) TO FIVE (COMPLETELY ACCEPTABLE). A DIFFERENT ORDER OF STIMULUS PRESENTATION WAS EMPLOYED ON EACH EXPERIMENTAL DAY--14 SS WERE ASSIGNED TO ONE ORDER ON DAY 1, AND RECEIVED THE OTHER ORDER ON DAY 2. RESULTS SHOW THAT SS TEND TO PREFER THE SAME STATEMENT OVER ORDERS, AND THAT RANK AND PREFERENCE ARE HIGHLY CORRELATED. THERE ARE CONSIDERABLE DIFFERENCES IN PREFERENCE AMONG THE 50 PAIRS OF STIMULUS ITEMS. PRE' IMINARY ANALYSIS OF THE DATA SUGGESTS THAT THIS TASK MAY YIELD INFORMATION RELEVANT TO THE LINGUISTIC AND IN PARTICULAR THE SURFACE SYNTACTIC COMPETENCE OF SS WHEN APPLIED TO AGRAMMATICAL STATEMENTS. SS APPEAR TO BE TRYING TO COPE WITH THE STATEMENTS BY COMPARING THEM TO ACCEPTABLE SEMANTICAL SYNTACTIC PATTERNS. THIS REPORT APPEARS IN "STUDIES IN LANGUAGE AND LANGUAGE BEHAVIOR, PROGRESS REPORT V," SEPTEMBER 1, 1967. (AUTHOR/AMM)

An Experimental Approach to the Display of Normal Linguistic Competence[1]

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Abstract

28 Ss were presented with computer-generated agrammatical statements, and asked to carry out 2 tasks on each of 2 experimental days. Task 1 was a forced-choice experiment in which 50 pairs of statements were presented aurally to each S, who had to select that member of the pair which he felt was the best approximation to a good English sentence. In Task 2, Ss were required to read and rank each statement on a scale running from 1 (completely unacceptable) to 5 (completely acceptable). A different order of stimulus presentation was employed on each experimental day; 14 Ss were assigned to 1 order on Day 1, and received the other order on Day 2.

Results show that Ss tend to prefer the same statement over orders, and that rank and preference are highly correlated. There are considerable differences in preference among the 50 pairs of stimulus items. Preliminary analysis of the data suggests that this task may yield information relevant to the linguistic and in particular the surface syntactic competence of Ss when applied to agrammatical statements. Ss appear to be trying to cope with the statements by comparing them to acceptable semantical syntactic patterns.

This study examines the ability of native speakers of English to make judgments concerning the "well-formedness," in varying degrees, of random strings of English sentence-formatives which are presented as putative sentences.

The following assumptions were made with respect to the knowledge a normal adult native speaker has, or has learned, about his language.

Elements. Linguistically, a given individual has available to him a stock of elements which are re-combinable into novel sequences, and which can be so re-combined readily in response to a variety of situations. However they are learned and fragmented from larger-to-smaller uncuttable units, this set of elements comprises the lexicon of the speaker.

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Two or more individuals may be said to belong to the same speech community when they possess (at least) a communality of lexicon, i.e., when the stock of elements which each possesses overlaps with another's stock of elements, so that mutual intelligibility is possible. Overlap may be of several sorts: chance overlap--with numbers usually small and mutual intelligibility, except for this small set of isolated elements, near zero; total overlap--in the case in which two individuals have identical histories of language acquisition, identical habits of usage, etc.; natural overlap--with numbers extremely large and mutual intelligibility nearly total, even to the extent that two individuals may speak with one another for a lifetime and not discover any element which they do not have in common.

Representation of elements. Each (normal-speaking) individual has the ability to represent the elements of his lexicon either phonologically (the observable representation is phonetic) or orthographically (if an alphabet is available), or both.

There is also a communality of element-representation; since no two individuals have identical pronunciation habits or handwriting, there are necessarily features of such representation which must be minimally present, in order for another to receive and respond to them. Here, also, there can exist a variety of degrees of convergence, ranging from chance to total, analogously to the overlap mentioned above, with natural convergence somewhere in between. In the case of natural convergence, representational skills in each individual overlap to the extent that neither takes much notice of how the other accomplishes his representation.

Combination of elements. If the stock of elements for each individual were randomly and infinitely combinable, one would need only to list them in no particular sort of ordering and with no constraints upon their occurrence. One can even combine the notions of element-in-itself and its representation--in minimally common features--so as to make the listing more parsimonious. An individual would thus be little more than a walking dictionary, speaking in lists whose ordering in time is immaterial.

It is clear, however, that this is not the case in natural language. Ordering of elements in the act of speech is also requisite in order to have intelligibility. Ordering is also shared from individual to individual. And again, such ordering of elements may be chance, total, or natural in its

convergence from individual to individual. In the natural case, the communality of ordering constraints in a speech community approximates totality very closely, but mistakes are noticed, or a speaker hearing himself may stumble, stop, and begin to speak again, correcting himself.

From the point of view of the linguistic analysis, it may be stated that (a) the stock of elements, (b) the minimal conditions for their intelligible representation, and (c) the constraints on their ordering is called the grammar of the language in which two or more individuals share. The grammar is an abstract device, stating regularities only, with perhaps some systematic ancillary statements that account for "deviance" of certain putative sentences from 'normal."

This research represents a preliminary attempt to test the viability of the method, to isolate the nature of ordering constraints on linguistic elements, when such ordering is disrupted. The results reported by no means claim to be conclusive concerning the total linguistic performance of individuals; rather, the analysis of the data has, as its focus for the present, questions regarding method.

Fifty pairs of agrammatical statements were selected for use in this study, with the members of the pairs of equal syntactic length, i.e., the number of formatives was the same for each string in a pair. The procedures by which these statements were generated assured agrammaticality. Pairs were presented to normal speakers of English in a forced-choice task. Ss were also required to rank each statement as to its approximation to good English.

Method

Construction of test materials. A computer program was designed to generate a set of 1000 pairs of statements of equal syntactic length.[2] Fifty pairs were selected for the study. The pairs were generated from ten grammatical sequences in English having the form: determiner + adverb + adjective + noun + S + verb + S + noun + preposition + noun. This yields a 10 x 10 matrix, representing 100 grammatical English sentences. The program operates on this matrix in the following fashion:

1. it first selects on a random basis, a length, between 1 and 10;
2. it then selects, randomly, items from the matrix;

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[2]The authors express gratitude to Professor B. A. Galler, University of Michigan, for his kind assistance in the construction of the computer program.

3. it continues to select items until a number of them representing twice the length has been reached;

4. it prints the selection of items with a space between the first and second halves of the string generated by Step 3 above (this procedure yields pairs of equal length); and

5. it continues this operation until the upper limit (1000 pairs) has been reached.

The 50 pairs (100 statements) are given in Table 1. In addition, this table also identifies the pair to which each statement belongs in each of two

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Insert Table 1 about here

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orders, and the sequence in which they appear in the pair for each order. Sequence of pairs was randomized separately for the two orders. Sequence within the pair was also random. Each order was presented to each S in the manner described below.

Test procedures. Ss were randomly assigned to one of two experimental conditions. One group of Ss responded to Order 1 on Day 1 of the experiment and Order 2 on Day 2. A second group of Ss was given Order 2 on Day 1, and Order 1 on Day 2. There was a one-day interval between experimental sessions.

The statements were recorded onto magnetic tape for presentation to Ss who were tested individually. Each pair was preceded by the statement indicating the pair number. A signal which activated a timer at the end of the second member of the pair was recorded on the second channel of the magnetic tape. The Ss heard the stimuli through a loudspeaker and responded by depressing one of two buttons on a response board. Their choice and response latency were automatically recorded by a computer (PDP-4). Upon completion of the response the tape playback was activated and, after a brief interval, the next pair in the sequence was presented. All strings presented audiolly were spoken with normal English-sentence intonation.

For the ranking task which was administered immediately following the preference experiment, Ss were given a test booklet which contained the 100 statements and a deck of cards with each statement in the order in which they appeared on the tape. The response booklet had columns, marked one to five, indicating approximation to a good English sentence, with one being completely unacceptable and five completely acceptable. Ss indicated their ranking for

each statement by putting a check mark in the appropriate column. Statements were ranked on each experimental day.

In the forced-choice task, Ss were told they would hear pairs of agrammatical statements which probably would not make sense. The Ss were instructed to select that member of each pair which they felt to be the best approximation to [good] English. They were told to indicate their choice by pushing one of two buttons on the response board. Ss were given as much time as they required to make a response.

For the ranking task, Ss were told that they were going to rank the statements they had just heard on the basis of their approximation to a good English sentence. They were instructed as to the degree of approximation represented by each number above the columns on the response sheets.

Subjects. Each of 28 college students with normal hearing was assigned to one of two experimental conditions, Day 1, Order 1 - Day 2, Order 2, or Day 1, Order 2 - Day 2, Order 1.

Results

While all the data for this study have been obtained, the results have been analyzed and interpreted only in part. In particular, the implications of the results to be described below have not yet received adequate attention.

Results obtained for the preference task will be taken up first. Table 2 shows the number of times a member of a pair was selected by the Ss for each order of presentation on each experimental day.

Insert Table 2 about here

Among the artifacts that may confound the present results, one is the possibility that Ss may consistently prefer one button, while another is that they may prefer the same statement on both experimental days. These tendencies could be considered either as competing, when a reversal in the sequence in the pair occurs over days, or as facilitory, when there is no change in position.

When all of the preference data are combined there is a significant tendency to prefer the first member of the pair over the second ($\chi^2 = 10.0$, $p < .01$). There is, however, a strong tendency for consistency in selection. For pairs that were not reversed across orders, there are 454 consistent responses as

opposed to 209 nonconsistent responses. When order within the pair is reversed, there are 476 consistent responses as against 245 inconsistent responses. This suggests that, on the whole, Ss tend to be responding to the statements rather than making some arbitrary decision without regard to the stimulus items.

Examination of the preference data reported in Table 2 shows that there are considerable differences in preference among the 50 pairs of stimulus items. In some cases there is almost perfect agreement among Ss as to preference. On the other hand, some items showed little agreement among Ss. More detailed analysis of the individual items is necessary before any theoretical and linguistic interpretation can be given to these data.

The question of consistency of preference was also examined by obtaining the correlation of preference responses for orders and days. Table 3 gives these correlations. It is evident from the significant and high correlations that Ss exhibit similar choice behavior on different days, and the order in which the pairs are presented does not influence preference.

Insert Table 3 about here

Table 4 shows the per cent of Ss who chose one particular member of a pair of statements in the preference task, taken over all conditions for all Ss.

Insert Table 4 about here

Latency of response in the preference task does not appear to be a powerful variable. The amount of inter-subject variability was too great to permit anything but a gross analysis of the data. There is a tendency for the latencies to increase with high inter-subject variability.

The distribution of ranks in terms of per cent Ss assigning a rank for each item on each day and each order is given in Table 5. Table 6 gives the distribution of rank over Ss and conditions. Correlations between rank and preference

Insert Tables 5 & 6 about here

were obtained for each pair. The overall correlations between preference and rank for all four experimental conditions are given in Table 7. These correlations are all significant at the .01 level. This means that when a S preferred

Insert Table 7 about here

a member of a pair, he tended to give it a high rank. When the member of a pair was not preferred it was given a low rank. These findings lend support to the argument that the S was in fact using his knowledge of English to guide him in his preferences, as well as his decision with respect to an item's approximation to good English.

Ss are remarkably consistent in their ranking behavior on this task, as is illustrated by the correlations given in Table 8. These correlations are all

Insert Table 8 about here

significant at the .01 level; there is no evidence to indicate that rankings tend to be higher or lower in the initial or final portions of the set of items. Analysis of variance was carried out to determine if there were significant day, list or order effects which were influencing the results. The obtained F values did not approach significance.

Discussion

Given a stimulus which deviates from normal English, presented to a native speaker of English, one might expect the following:

1. a bizarreness reaction to any (putative) sentence which deviates in any way from complete normality;

2. less of a bizarreness reaction to one putative sentence than to another (i.e., a preference, under appropriately clear instructions in experimental situations), if the one approximates more closely a "normal" sentence than does the other;

3. to the extent of the deviance from normal "sentencehood," uneven bizarre reactions to putative sentences, though all strings presented may be quite deviant, e.g.,

*Make delicious eats.

*Rice above a.

4. that the individual to whom a putative sentence, or sentences, is presented will either assign a higher rank to, or express preference for, sentences which in one way or another approximate "first-order grammaticalness" more closely than others.

Functionally, it is not assumed that the grammar is reified, except for purposes of ease in discussion; and further it is not assumed that "grammaticalness" is <u>in</u> (or partially <u>in</u>) any sentence or putative sentence, but rather is the description of the normality assigned to it by the members of the speech community which utilize it for communication. Thus, one of the goals of the present study is to make intersubjective what is at present intuitive. Two sets of possibilities, each generable from differing viewpoints, serve as a basis for interpretation of the obtained data.

When a given individual makes the response "closer to normal" to a given string or putative sentence, that individual is contributing criteria of judgment which represent his own (learned) abilities to interpret and respond to strings of formatives in his language. This is insured by the method in which the stimulus materials were constructed: all surface syntactic constraints were removed. The response "closer to normal," behaviorally, may arise from one or both of two possible properties of the (normal adult) organism: (a) the string possesses, for him, a greater degree of situational adequacy than others (i.e., it is semantically closer to normal English); or (b) in the absence of this condition, the string possesses a greater degree of grammatical adequacy than others (i.e., it is formally closer to normal English perhaps in several respects).

However, since interpretations like the ones above are basically competence-considerations, they must retain the status of hypotheses and await further refinement of our understanding, both of language and of the organisms using it. And since the act of interpretation itself is a performance-consideration, having all the typical constraints of performance (limited memory, experience, history, etc.), we must say that our data are performance data and their configurations are performance-configurations. In this way, it may be concluded that when an individual states that he prefers one string to another, he is in effect stating that either (a) he has previously responded to the string elsewhere, or to one similar to it, regardless of its degree or type of deviance; or (b) if this is not true, the preferred string is more easily "adjustable," or interpretable, than are others via projections made on it from the <u>S</u>'s normal linguistic repertoire. What cannot be shown by these data, of course, are theoretically-expressible properties of strings whose analogues are not within the individual <u>S</u>'s repertoires.

Another question which lies within the domain of performance-criteria is the following: does the S express preference for a string on the basis of only a portion of it? At least, in one sense, there is a possibility that given two nonsensical, agrammatical strings, the one which possesses even the slightest suggestion of "normality," as opposed to the other, will be chosen, since the choice is forced. For example, sentences 5 and 6, presented (audiolly) as a pair, are as follows:

5. "Meal sand soldier wine after the."

6. "Show rice wine daughters delicious home."

Categorical relations for English determine that the only reasonable projection on sentence 5, for normality of element-ordering, is on the substring "after the." The remaining elements of the statement can be treated as a list. However, in sentence 6, there are many features of the structure of English, and perhaps, also features of a given S's experience, which might be projected upon the string. First, in terms of an individual's experience, the string might appear to have "telegraphic" form, i.e., determiners have been deleted for economy. On the other hand, it resembles, in its syntactic shape, either an imperative or an infinitive construct: something similar, say, to

6a. "Show high society women beautiful jewelry" [in answer, perhaps to the question, "What does George do for a living?"] or, "What are my duties?" in which case it resembles a truncated sentence; or perhaps it might be an imperative [in answer to the question, "What shall I do today?"].

The relations between show--home, or show--daughters--home are perfectly normal sequences which can occur in a number of fully adequate sentences in English. The sequence rice wine is normal. Further, though grammatical relations are obscure, the collocation of wine--delicious is common.

Finally, in sentence 5, the only possible collocation of semantic items might involve meal--wine--after--the; however, their ordering is far from normal, and the particular ordering would not appear in normal English even under the most complex of transformational relations, and even when these are so used as to produce that sort of deviance found in use as a literary device.

This interpretation is not intended to explain the fact that sentence 6 was preferred to sentence 5 by more than 75 per cent of the experimental population. It simply serves to suggest that sentence 6 appears to accommodate

more projections by S from a grammatical pattern that he doubtless knows. In addition, sentence 6 exhibits a larger number of compatible semantic notions or situational responses, and has more parts which, to the exclusion of the rest of the string, are either fully normal or closer to normal than anything found in sentence 5, i.e., are constituents of fully-grammatical and meaningful English sentences. While these present data do not yield discriminable information as to whether the Ss' choices were made on the basis of semantic/situational adequacy, lexical adequacy, or syntactic adequacy. Studies are now in progress in which it is hoped this discriminability will be obtained.

We believe that for some reason or other, native speakers of a language do impose interpretations upon random strings of formatives in their language. Ss do this even when it is known that there are no constraints whatsoever within the strings themselves (i.e., even when the "sender" is encoding no message, the "receiver" does not receive a non-message, but, rather, attempts to reconstruct some sort of message). Further, this is done not only on the phonetic and phonological levels (where much research has been done to demonstrate this) but also, as is shown here, on levels that can only be called quite abstract: syntax, lexicon, meaning.

Recent claims, on the theoretical side, to the effect that an organism acquires a grammar and that at some point in its history it can then interpret--or impose interpretations on--any string in the language whose grammar has been internalized, appear to be supported at least in part by the results of the present investigation. Most significant is the fact that the Ss in this research were not trained to their experimental task, nor were they conditioned to some notion of "acceptability" (which in terms of the goals here would simply beg the question: how does the experimenter know what is "acceptable?"), nor was there any pattern in the stimulus materials to which they might ultimately have come to respond during the experimental sessions. In short, what has been demonstrated, experimentally, is something contributed by the individual to putative linguistic materials which contributed nothing in themselves. If the choices are considered as dependent variables, then we have shown only that there are indeed independent variables controlling the choices. The extent, nature, and function of these variables will be the subject of further research.

Table 1

Stimulus Statements, Order of Presentation and Button Assignment for Orders 1 and 2

	Statement	Order 1		Order 2	
		Pair No.	Button	Pair No.	Button
1.	Fews make home book old professors man.	1	A	38	B
2.	With drink the young knowledge primarly especially sausage.	1	B	38	A
3.	Whiskeys straws wine makes daughters.	2	A	22	A
4.	Young young buildings grow less hole milk.	2	B	22	B
5.	Meal sand soldier wine after the.	3	A	44	A
6.	Show rice wine daughters delicious home.	3	B	44	B
7.	New show these extremely.	4	A	11	B
8.	Rices above a.	4	B	11	A
9.	Intelligence news good deliciouses many strong.	5	A	36	B
10.	Extremely primarily beautiful foods food windows lakes.	5	B	36	A
11.	The milk those rice.	6	A	4	B
12.	Around milk paint around.	6	B	4	A
13.	Around drink machines windows more book the jobs.	7	A	19	A
14.	Many especiallys big ugly machineseses.	7	B	19	B
15.	Help quiteses extremely windows paint lady sand.	8	A	21	B
16.	During sand paint essentials good man above big.	8	B	21	A
17.	Verys.	9	A	45	B
18.	Make among.	9	B	45	A
19.	Group deliciouses paint some outside.	10	A	12	B
20.	Lady sand through grow soldiers.	10	B	12	A
21.	Home dishes.	11	A	26	A
22.	Eats.	11	B	26	B
23.	Food those during woods thoses.	12	A	6	B
24.	Old rice good delicious grow strong eat.	12	B	6	A
25.	With professors lakes drink.	13	A	3	B
26.	Seven seven man seven machines view.	13	B	3	A
27.	Make delicious eats.	14	A	37	B
28.	Through prefer few delicious.	14	B	37	A
29.	Professors group group.	15	A	7	B
30.	Quite dishes meal after.	15	B	7	A
31.	Food show.	16	A	14	B
32.	Above wine.	16	B	14	A
33.	Man grows soldiers among several.	17	A	10	A
34.	Help view daughters ins whiskey dishes.	17	B	10	B
35.	Home make rices showseses intelligence.	18	A	32	B
36.	Quite jobs strong machines very drinks straw help.	18	B	32	A
37.	Very with make extremely the windowses.	19	A	43	A
38.	Newses very delicious man.	19	B	43	B
39.	Grow makes rice.	20	A	8	A
40.	Building quite soldiers.	20	B	8	B
41.	Especially old.	21	A	5	A
42.	Lakeses.	21	B	5	B
43.	Rices greens grow view.	22	A	16	B
44.	Around above lady like fields lady.	22	B	16	A
45.	Book bigs during green prefer jobses.	23	A	23	A
46.	Prefers daughters groups the drinks.	23	B	23	B
47.	Woods.	24	A	20	B
48.	Machines classes.	24	B	20	A
49.	With outside show classes help.	25	A	31	B
50.	Classes machines building intelligence especially.	25	B	31	A

Table 1 (Continued)

Stimulus Statements, Order of Presentation and Button Assignment for Orders 1 and 2

	Statement	Order 1		Order 2	
		Pair No.	Button	Pair No.	Button
51.	Soldier group makeses wood man dishesss.	26	A	34	A
52.	Simply paint make with these daughters news group.	26	B	34	B
53.	Home steel classes.	27	A	2	A
54.	Beautifuls extremely.	27	B	2	B
55.	This book daughters.	28	A	46	A
56.	Lakes new totally.	28	B	46	B
57.	Someses like lakes few windows ugly.	29	A	30	B
58.	Food strong simplysesesesses.	29	B	30	A
59.	Strong very through grows a jobs very.	30	A	41	A
60.	Outside very less sand help less strong ugly.	30	B	41	B
61.	The beyond knowledge thoses building seven intelligence.	31	A	40	A
62.	Windowses holes arounds help primarily.	31	B	40	B
63.	Paint espeicillys.	32	A	9	A
64.	Essentials dishes jobs.	32	B	9	B
65.	After totally.	33	A	1	A
66.	Buildings.	33	B	1	B
67.	Windows intelligences strong soldier seven hole intelligence.	34	A	13	A
68.	After some especially help lady daughters new sand.	34	B	13	B
69.	Big home.	35	A	24	A
70.	Those several.	35	B	24	B
71.	Beyond primarily seven fields this.	36	A	48	B
72.	Prefer intelligence grow big make.	36	B	48	A
73.	View group intelligences.	37	A	35	A
74.	Beautifuls young man.	37	B	35	B
75.	Especially a sand helps these extremely view the.	38	A	25	B
76.	Lesses cat totally thoses with beautiful these.	38	B	25	A
77.	Prefer jobs less man.	39	A	17	A
78.	Green primarily especially wood.	39	B	17	B
79.	Several rice during book outside hole.	40	A	15	A
80.	Quite throughses prefer daughters.	40	B	15	B
81.	Help outside whiskey professor good extremelys with.	41	A	50	A
82.	More amongs classes windowses above big.	41	B	50	B
83.	Steel fields knowledge eat wood.	42	A	39	A
84.	In shows seven around.	42	B	39	B
85.	Prefer buidling daughters meal classes few withs meal.	43	A	42	B
86.	Whiskeys buildingseses jobses daughters.	43	B	42	A
87.	Classes beyond with green.	44	A	18	B
88.	Machines seven the home.	44	B	18	A
89.	Uglys prefer good a these deliciouseses.	45	A	33	B
90.	Few beyond fields simply book after big hole.	45	B	33	A
91.	After help machines dishesses more buildings.	46	A	49	B
92.	Aboves soldier several group professor foods ugly.	46	B	49	A
93.	Group seven simply green.	47	A	29	A
94.	Above bigs meal.	47	B	29	B
95.	Show after several help professors above.	48	A	27	A
96.	Seven professeses good view.	48	B	27	B
97.	Verys.	49	A	28	B
98.	With wine.	49	B	28	A
99.	Several theses prefer eat group simply simply.	50	A	47	B
100.	Strong the meal drink during quite classes.	50	B	47	A

Table 2

Number of Times a Member of a Pair Selected by Ss for Days and Orders and for Orders Across Days. (N=14, in Each Group)

	Statement	Day_1 $Order_1$	Day_1 $Order_2$	Day_2 $Order_2$	Day_2 $Order_1$	$Order_1$	$Order_2$
1.	Fews make homebook old professors man.	6	10	10	9	15	20
2.	With drink the young knowledge primarly especially amongs.	8	4	4	5	13	8
3.	Whiskeys straws wine makes daughters.	7	4	1	2	9	5
4.	Young young buildings grow less hole milk.	7	10	13	12	19	23
5.	Meal sand soldier wine after the.	2	2	1	7	9	3
6.	Show rice wine daughters delicious home.	12	12	13	7	19	25
7.	New show these extremely.	12	11	11	10	22	22
8.	Rices above a.	2	3	3	4	6	6
9.	Intelligence news good deliciouses many strong.	5	7	5	4	9	12
10.	Extremely primarily beautiful foods food windows lakes.	9	7	9	10	19	16
11.	The milk those rice.	4	5	1	4	8	6
12.	Around milk paint around.	10	9	13	10	20	22
13.	Around drink machines windows more book the jobs.	12	13	13	10	22	26
14.	Many especiallys big ugly machineseses.	2	1	1	4	6	2
15.	Help quiteses extremely windows paint lady sand.	5	5**	9	10	15	14
16.	During sand paint essentials good man above big.	9	8**	5	4	13	13
17.	Verys.	7**	4	5	5	12	9
18.	Make among.	6**	10	9	9	15	19
19.	Group deliciouses paint some outside.	8	5	8	3	11	13
20.	Lady sand through grow soldiers.	6	9	6	11	17	15
21.	Home dishes.	10	9	7	8	18	16
22.	Eats.	4	5	7	6	10	12
23.	Food those during woods thoses.	2	3**	5	4	6	8
24.	Old rice good delicious grow strong eat.	12	10**	9	10	22	19
25.	With professors lakes drink.	7	5**	1*	10	17	6
26.	Seven seven man seven machines view.	7	6**	12*	4	11	18
27.	Make delicious eats.	10	10	10	12	22	20
28.	Through prefer few delicious.	4	4	4	2	6	8
29.	Professors group group.	9	7	12	11	20	19
30.	Quite dishes meal after.	5	7	2	3	8	9
31.	Food show.	3	2	5	6	9	7
32.	Above wine.	11	12	9	8	19	21
33.	Man grows soldiers among several.	13	11	14	11	24	25
34.	Help view daughters ins whiskey dishes.	1	3	0	3	4	3
35.	Home make rices showseses intelligence.	4	6	8	9	13	14
36.	Quite jobs strong machines very drinks straw help.	10	8	6	5	15	14
37.	Very with make extremely the windowses.	2	6	8	8	10	14
38.	Newses very delicious man.	12	8	6	6	18	14
39.	Grow makes rice.	10	12	11	12	22	23
40.	Building quite soldiers.	4	2	3	2	6	5
41.	Especially old.	13	12	14	12	25	26
42.	Lakeses.	1	2	0	2	3	2
43.	Rices greens grow view.	6	10	9	9	15	19
44.	Around above lady like fields lady.	8	4	5	5	13	9
45.	Book bigs during green prefer jobses.	1	7	2	5	6	9
46.	Prefers daughters groups the drinks.	13	7	12	9	22	19
47.	Woods.	12	8	10	6*	18	18
48.	Machines classes.	2	6	4	7*	9	10
49.	With outside show classes help.	9	14	13	11	20	27
50.	Classes machines building intelligence especially	5	0	1	3	8	1
51.	Soldier grows makeses wood men dishesses.	2	5	3	2	4	8
52.	Simply paint make with these daughters news group.	12	9	11	12	24	20
53.	Home steel classes.	10	12	13	14	24	25

Table 2 (Continued)

Number of Times a Member of a Pair Selected by Ss for Days and Orders and for Orders Across Days. (N=14, in Each Group)

	Statement	Day_1 $Order_1$	Day_1 $Order_2$	Day_2 $Order_2$	Day_2 $Order_1$	$Order_1$	$Order_2$
54.	Beautifuls extremely.	4	2	1	0	4	3
55.	This book daughters.	5	9	5	6	11	14
56.	Lakes new totally.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
57.	Someses like lakes few windows ugly.	13	14	13	14	27	27
58.	Food strong simplysesssssesses.	1	0	1	0	1	1
59.	Strong very through grows a jobs very.	8	6	8	9	17	14
60.	Outside very less and help less strong ugly.	6	8	6	5	11	14
61.	The beyond knowledge thoses building seven intelligence.	10	7	8	6	16	15
62.	Windowses holes arounds help primarily.	4	7	6	8	12	13
63.	Paint especiallys.	6	7	7	5	11	14
64.	Essentials dishes jobs.	8	7	7	9	17	14
65.	After totally.	3	10	4	9	12	14
66.	Buildings.	11	3	10	5	16	13
67.	Windows intelligences strong soldier seven hole intelligence.	4	4	4	2	6	8
68.	After some especially help lady daughters new sand.	10	10	10	12	12	20
69.	Big home.	12	12	13	11	21	25
70.	Those several.	2	2	1	3	5	3
71.	Beyond primarily seven fields this.	6	6	8	5	11	14
72.	Prefer intelligence grow big make.	8	8	6	9	17	14
73.	View group intelligences.	9	11	12	10	19	23
74.	Beautifuls young man.	5	3	2	4	9	5
75.	Especially a saud helps these extremely view the.	4	13	7	7	11	20
76.	Lessas eat totally thoses with beautiful these.	10	1	7	7	17	8
77.	Prefer jobs less man.	5*	7	9	6*	11	16
78.	Green primarily especially wood.	7*	7	5	4*	11	12
79.	Several rice during book outside hole.	7	7	6	5	12	13
80.	Quite throughses prefer daughters.	7	7	8	9	16	15
81.	Help outside whiskey professor good extremelys with.	10	9	7	9	19	15
82.	More amongs classes windowses above big.	4	6	7	5	9	13
83.	Steel fields knowledge eat wood.	6	4	3	5	11	7
84.	In shows seven around.	8	10	11	9	17	21
85.	Prefer building daughters meal classes withs meal.	12	7	9	11	23	16
86.	Whiskeys buildingseses jobses daughters.	2	7	5	3	5	12
87.	Classes beyond with green.	6	7	8	6	12	15
88.	Machines seven the home.	8	7	6	8	16	13
89.	Uglys prefer good a these deliciouseses.	2	4	5	3	5	9
90.	Few beyond fields simply book after big hole.	12	10	9	11	23	19
91.	After help machines dishes mores buildings.	9	5	8	5	14	13
92.	Aboves soldier several group professor foods ugly.	5	9	6	9	14	15
93.	Group seven simply green.	13	13	12	13	26	25
94.	Above bigs meal.	1	1	2	1	2	3
95.	Show after several help professors above.	10	9	7	7	17	16
96.	Seven preferseses good view.	4	5	7	7	11	12
97.	Verys.	3	4	1	3	6	5
98.	With wine.	11	10	13	11	22	23
99.	Several theses prefer eat group simply simply.	7	6	10	4	11	16
100.	Strong the meal drink during quite classeses.	7	8	4	10	17	12

*Entries with * will not add up to 14 because it was necessary to reject some of the responses.

Table 3

Correlation Coefficients to Estimate Degree of Preference Consistency for Orders and Days

Condition	r*
Day 1 - Order 1 and Order 2	.639
Day 2 - Order 2 and Order 1	.723
Order 1 - Day 1 and Day 2	.888
Order 2 - Day 1 and Day 2	.781

*all r's significant at or beyond the .01 level of confidence

Table 4

Per Cent Ss Preferring Statements Presented in Pairs in the Preference Task

0-24% Preference

No.	Statement
2.	With drink the young knowledge primarily especially amongs.
3.	Whiskeys straws wine makes daughters.
5.	Meal sand soldier wine after the.
8.	Rices above a.
14.	Many especiallys big ugly machineseses.
34.	Help view daughters ins whiskey dishes.
40.	Building quite soldiers.
42.	Lakeses.
50.	Classes machines building intelligence especially.
51.	Soldier group makeses wood man disheses.
54.	Beautifuls extremely.
58.	Food strong simplyseseseseses.
70.	Those several.
94.	Above bigs meal.
97.	Verys.

25-49% Preference

9.	Intelligence news good deliciouses many strong.
11.	The milk those rice.
16.	Durings sand paint essentials good man above big.
17.	Verys.
19.	Group deliciouses paint some outside.
22.	Eats.
23.	Food those during woods thoses.
25.	With professors lakes drink.
28.	Through prefer few delicious.
30.	Quite dishes meal after.
31.	Food show.
35.	Home make rices showseses intelligence.
37.	Very with make extremely the windowses.
44.	Around above lady like fields lady.
45.	Book bigs during green prefer jobses.
48.	Machines classes.
55.	This book daughters.
60.	Outside very less sand help less strong ugly.
62.	Windowses holes arounds help primarily.
63.	Paint especiallys.
65.	After totally.
67.	Windows intelligences strong soldier seven hole intelligence.
71.	Beyond primarily seven fields this.
74.	Beautifuls young man.
76.	Lesses cat totally thoses with beautiful these.

Table 4 (Continued)

Per Cent Ss Preferring Statements Presented in Pairs in the Preference Task

25-49% Preference - cont'd

No.	Statement
77.	Prefer jobs less man.
78.	Green primarily especially wood.
79.	Several rice during book outside hole.
82.	More amongs classes windowses above big.
83.	Steel fields knowledge eat wood.
86.	Whiskeys buildingseses jobses daughters.
87.	Classes beyond with green.
89.	Uglys prefer good a these deliciouseses.
91.	After help machines disheses mores buildings.
96.	Seven preferseses good view.
99.	Several theses prefer eat group simply simply.

50-74% Preference

1.	Fews make home book old professors man.
10.	Extremely primarily beautiful foods food windows lakes.
15.	Help quiteses extremely windows paint lady sand.
18.	Make among.
20.	Lady sand through grow soldiers.
21.	Home dishes.
24.	Old rice good delicious grow strong eat.
26.	Seven seven man seven machines view.
29.	Professors group group.
32.	Above wine.
36.	Quite jobs strong machines very drinks straw help.
38.	Newses very delicious man.
43.	Rices greens grow view.
46.	Prefers daughters groups the drinks.
47.	Woods.
56.	Lakes new totally.
59.	Strong very through grows a jobs very.
61.	The beyond knowledge thoses building seven intelligence.
64.	Essentials dishes jobs.
66.	Buildings.
72.	Prefer intelligence grow big make.
75.	Especially a sand helps these extremely view the.
80.	Quite throughses prefer daughters.
81.	Help outside whiskey professor good extremelys with.
84.	In shows seven around.
85.	Prefer building daughters meal classes few withs meal.
88.	Machines seven the home.
92.	Aboves soldier several group professor foods ugly.
95.	Show after several help professors above.
100.	Strong the meal drink during quite classeses.

Table 4 (Continued)

Per Cent Ss Preferring Statements Presented in Pairs in the Preference Task

75% or Greater Preference

No.	Statement
4.	Young young buildings grow less hole milk.
6.	Show rice wine daughters delicious home.
7.	New show these extremely.
12.	Around milk paint around.
13.	Around drink machines windows more book the jobs.
27.	Make delicious eats.
33.	Man grows soldiers among several.
39.	Grow makes rice.
41.	Especially old.
49.	With outside show classes help.
52.	Simply paint make with these daughters news group.
53.	Home steel classes.
57.	Someses like lakes few windows ugly.
68.	After some especially help lady daughters new sand.
69.	Big home.
73.	View group intelligences.
90.	Few beyond fields simply book after big hole.
93.	Group seven simply green.
98.	With wine.

Table 5

Distribution of Ranks in Terms of Per Cent Ss assigning a Particular Rank to Each Item. (N=28)

Statement	Order$_1$					Day$_1$ Order$_2$					Day$_2$ Order$_1$					Day$_2$ Order$_2$					Order$_1$					Order$_2$				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1	—	21	71	07	—	07	07	36	36	14	07	21	50	21	—	14	28	28	21	07	04	21	60	14	—	10	18	32	28	10
2	—	21	50	28	—	00	21	21	36	14	14	21	36	28	—	14	43	21	14	07	07	21	43	28	—	10	27	21	25	10
3	07	21	21	36	14	07	07	57	21	07	07	07	36	50	—	—	07	64	28	—	07	14	28	43	07	04	07	60	24	10
4	—	07	07	36	50	—	28	28	28	21	—	07	14	43	36	—	—	36	43	21	—	07	10	40	43	—	14	32	36	21
5	21	36	14	14	14	—	14	64	21	—	14	43	21	21	—	21	43	14	21	—	18	40	18	18	07	10	28	40	21	—
6	—	36	28	14	21	28	14	43	07	07	—	—	28	36	36	07	14	36	21	21	—	18	28	25	28	18	14	40	14	14
7	21	07	28	36	07	—	28	21	43	07	—	21	43	28	07	—	36	21	36	07	10	14	36	28	07	—	32	21	40	07
8	21	14	28	36	—	14	28	21	21	14		14	36	43	07	14	36	14	21	14	10	14	32	40	04	14	32	18	21	14
9	36	28	28	—	07	14	21	21	43	—	28	50	21	—	—	21	57	07	14	—	32	39	24	—	04	18	39	14	28	—
10	43	28	14	07	07	28	43	21	07	—	28	50	14	07	—	36	36	14	14	—	36	39	14	07	04	32	40	18	10	—
11	14	50	21	14	—	28	14	43	07	07	07	64	21	07	—	—	43	28	21	07	10	57	21	10	—	14	28	36	14	07
12	—	07	21	28	43	07	57	21	14	—	—	14	36	36	14	—	21	21	57	—	—	10	36	32	36	04	39	21	36	—
13	07	14	57	21	—	14	21	21	28	14	—	36	28	28	07	—	—	50	28	21	04	25	42	24	04	07	10	36	28	18
14	43	28	28	—	—	36	43	14	07	—	36	43	07	14	—	36	43	21	—	—	40	36	18	07	—	36	43	18	04	—
15	43	28	07	21	—	28	36	07	28	—	21	36	14	28	—	21	64	14	—	—	32	32	10	24	—	24	50	10	14	—
16	07	43	28	14	07	36	21	28	07	07	14	71	—	14	—	07	28	50	07	07	10	57	14	14	04	22	24	39	07	07
17	14	28	28	28	—	14	07	21	36	21	07	43	28	14	07	21	64	—	07	07	10	36	28	41	04	18	36	10	21	14
18	—	07	14	64	14	36	43	07	—	14	—	07	21	64	07	—	21	36	21	21	—	07	18	64	10	18	32	21	10	18
19	07	28	14	28	21	14	28	36	07	14	07	21	36	36	—	—	14	36	43	07	07	24	25	32	10	07	21	36	25	10
20	—	28	36	21	14	14	28	21	28	07	07	28	28	36	—	—	36	50	07	07	04	21	32	28	07	07	32	36	18	07
21	07	07	07	28	50	14	21	07	28	28	—	—	28	21	50	—	28	—	21	50	04	04	18	24	50	07	24	04	24	39
22	07	21	14	14	43	28	07	14	07	43	07	14	07	07	64	07	21	14	21	36	07	18	10	10	54	18	14	14	14	40
23	21	57	07	14	—	36	50	07	—	07	28	64	07	—	—	14	50	28	07	—	24	60	07	07	—	25	50	18	04	04
24	07	57	14	07	14	07	36	36	21	—	14	50	14	21	—	—	50	36	14	—	10	54	14	14	07	04	43	36	18	—
25	—	21	21	50	07	07	07	14	64	07	—	28	28	28	14	—	—	21	64	—	—	24	24	39	14	04	04	18	64	14
26	07	21	14	43	14	—	28	57	14	—	—	28	21	50	—	—	28	28	43	—	04	24	18	46	07	—	28	42	28	—
27	07	14	14	36	28	07	50	28	14	—	07	—	14	36	43	—	07	50	28	14	07	07	14	36	36	04	28	39	41	07
28	07	50	28	14	—	—	14	36	28	21	14	21	36	28	—	—	63	57	—	—	10	36	32	21	—	—	28	46	14	10
29	—	14	28	28	28	07	14	50	21	07	—	07	43	21	28	—	21	28	36	14	—	10	36	24	28	04	18	39	28	14
30	—	36	43	07	14	14	50	21	14	—	07	50	43	—	—	—	57	36	07	—	04	43	43	04	07	07	54	28	10	—
31	—	07	28	36	28	07	21	14	14	43	—	07	14	28	50	—	36	14	28	21	—	07	21	32	39	04	28	14	21	32
32	—	14	14	43	28	14	21	07	21	36	—	—	21	36	43	—	28	07	36	28	—	07	18	40	36	07	24	07	28	32
33	—	21	14	14	50	—	14	28	36	43	—	07	21	43	28	—	—	36	43	21	—	14	18	28	39	—	07	32	40	21
34	14	21	28	28	07	14	43	36	07	—	07	28	36	14	14	—	36	43	21	—	10	24	32	41	18	07	40	40	14	—
35	28	36	36	—	—	—	14	14	57	14	28	36	21	14	—	14	43	28	14	—	28	36	28	07	—	07	28	41	36	07

Table 5 (Continued)

Distribution of Ranks in Terms of Per Cent Ss assigning a Particular Rank to Each Item. (N=28)

Statement	Day$_1$ Order$_1$					Day$_1$ Order$_2$					Day$_2$ Order$_1$					Day$_2$ Order$_2$					Order$_1$					Order$_2$				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
36	21	57	21	—	—	14	43	28	07	07	07	50	36	07	—	21	50	21	07	—	14	54	28	04	—	14	46	24	07	04
37	07	71	07	14	—	14	36	36	14	—	21	36	28	14	—	07	57	21	14	—	14	54	18	14	—	10	46	28	14	—
38	14	43	21	14	07	21	36	36	—	07	21	21	36	21	—	14	36	43	—	07	18	32	28	18	04	18	36	40	—	07
39	—	21	14	21	43	—	14	50	21	14	—	07	07	50	36	—	21	36	43	—	—	14	10	36	40	—	18	43	32	07
40	14	21	21	14	28	—	28	36	28	07	—	21	50	21	07	07	43	36	14	—	07	21	36	18	18	04	36	36	21	04
41	07	21	14	21	36	07	21	07	21	43	—	14	21	21	43	14	21	14	21	28	04	18	18	21	40	10	21	10	21	36
42	36	28	21	14	—	57	28	14	—	—	36	28	36	—	—	21	21	36	—	21	36	28	28	07	—	39	24	25	—	10
43	—	21	43	36	—	—	43	14	28	14	—	21	21	43	14	—	14	64	14	07	—	21	32	40	07	—	28	39	21	10
44	07	36	28	28	—	14	21	43	21	—	21	21	21	28	07	—	43	36	07	14	14	28	24	28	04	07	32	40	14	07
45	—	43	28	28	—	07	28	28	21	14	—	36	28	21	14	07	21	36	21	14	—	40	28	24	07	07	24	32	21	14
46	—	50	28	14	07	07	50	21	21	—	14	07	36	36	07	—	28	50	21	—	07	28	32	25	07	04	39	36	21	—
47	07	14	—	28	50	21	28	07	07	36	—	07	21	14	57	14	21	21	07	36	04	10	10	21	54	18	24	14	07	36
48	07	21	14	50	07	07	21	43	14	14	07	07	28	43	14	07	14	36	43	—	07	14	21	46	10	07	18	40	28	07
49	—	07	28	50	14	—	—	21	43	36	—	—	07	64	28	—	07	21	43	28	—	04	18	57	21	—	04	21	43	32
50	14	36	36	14	—	—	28	07	64	—	—	28	50	21	—	07	14	28	50	—	07	32	42	18	—	04	21	18	37	—
51	28	36	28	07	—	14	36	36	14	—	28	28	28	14	—	14	28	36	21	—	28	32	28	10	—	14	32	36	18	—
52	07	36	43	14	—	07	50	28	07	07	07	43	21	28	—	—	36	28	36	—	07	40	32	21	—	04	43	28	22	04
53	—	21	14	50	14	—	28	14	43	14	—	14	28	50	07	—	14	36	28	21	—	18	21	50	10	—	21	25	36	28
54	43	28	14	07	07	21	43	36	14	—	28	28	36	07	—	21	50	14	—	—	36	28	25	07	04	21	47	25	07	—
55	—	21	36	36	07	14	—	21	43	21	07	21	21	21	28	—	07	36	43	14	04	21	28	28	18	07	04	28	43	18
56	—	21	50	21	07	07	14	21	50	07	—	14	43	36	07	07	14	36	43	—	—	18	47	28	07	07	14	28	47	07
57	21	36	07	28	07	21	28	21	21	07	21	36	43	—	—	21	36	28	14	—	21	36	25	14	04	21	32	24	18	04
58	64	28	07	—	—	71	21	07	—	—	43	50	07	—	—	64	28	07	—	—	54	39	07	—	—	68	24	07	—	—
59	14	36	07	36	07	07	64	14	07	07	21	43	—	36	—	14	50	21	14	—	18	40	04	36	04	10	57	18	10	04
60	14	50	21	07	07	21	21	43	14	—	07	57	28	07	—	14	14	71	—	—	10	54	24	07	04	18	18	57	07	—
61	21	36	21	14	07	14	36	28	14	07	07	43	28	21	—	07	28	28	36	—	14	40	24	18	04	10	32	28	25	04
62	14	28	28	21	07	14	28	36	14	07	07	43	50	—	—	—	28	43	14	14	10	36	39	10	04	07	28	40	14	10
63	14	28	28	21	07	14	50	28	—	07	07	28	21	36	07	07	21	50	21	—	10	28	24	28	07	10	36	39	10	04
64	07	36	21	21	14	07	28	43	21	—	—	50	28	21	—	21	21	36	14	07	04	43	24	21	07	14	24	40	18	—
65	—	07	36	36	21	07	36	28	21	07	—	28	28	28	14	14	36	—	36	14	—	18	32	32	18	10	36	14	28	10
66	—	21	07	21	50	14	07	—	21	57	—	07	21	07	64	14	36	—	14	36	—	14	14	14	57	14	22	—	18	46
67	07	28	28	36	—	14	57	07	21	—	28	28	21	21	—	21	28	36	07	07	18	28	24	28	—	18	42	22	14	04
68	07	28	36	21	07	14	14	21	43	07	—	43	21	36	—	14	28	36	14	07	04	36	28	28	04	14	21	28	28	07
69	—	21	14	21	43	07	28	14	—	50	—	—	21	21	57	07	21	21	07	43	—	10	18	21	50	07	24	18	04	46
70	—	21	36	28	14	07	36	21	21	14	07	07	43	36	07	07	14	43	21	14	04	14	40	32	10	07	25	32	21	14
71	—	28	14	43	14	—	36	36	21	07	—	36	14	43	07	—	21	21	50	07	—	32	14	43	10	—	28	28	36	07
72	—	28	36	28	07	—	50	36	14	—	—	28	36	28	07	—	50	21	28	—	—	28	36	28	07	—	50	28	21	—
73	—	14	14	43	28	—	07	28	28	36	—	07	14	43	36	—	07	43	28	21	—	10	14	43	32	—	07	36	28	28

Table 5 (Continued)

Distribution of Ranks in Terms of Per Cent Ss assigning a Particular Rank to Each Item. (N=28)

Statement	Day$_1$ Order$_1$					Day$_1$ Order$_2$					Day$_2$ Order$_1$					Day$_2$ Order$_2$					Order$_1$					Order$_2$				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
74	07	43	28	21	—	14	43	28	07	07	07	21	64	07	—	14	36	14	36	—	07	32	60	14	—	14	36	21	22	04
75	07	21	36	36	—	07	07	64	21	—	14	43	28	14	—	—	28	28	28	14	10	32	32	25	—	04	18	46	24	07
76	28	36	14	21	—	14	57	07	21	—	21	21	21	28	07	36	14	21	28	—	24	28	18	24	04	25	36	14	24	—
77	—	28	14	57	—	07	21	43	14	14	—	07	43	36	14	—	36	43	21	—	—	18	28	46	07	04	28	43	18	07
78	—	28	28	21	21	07	07	21	57	07	—	21	43	36	—	—	28	36	21	14	—	24	36	28	10	04	36	28	39	10
79	07	36	36	14	07	14	07	28	28	21	—	36	43	21	—	07	43	07	36	07	04	36	40	18	04	10	25	18	32	14
80	07	21	21	50	—	14	36	14	28	07	21	07	36	28	07	14	28	14	36	07	14	14	28	39	04	14	32	14	32	07
81	28	50	21	—	—	21	50	21	07	—	14	21	43	21	—	21	57	21	—	—	21	36	32	10	—	21	54	21	04	—
82	21	50	28	—	—	14	36	43	07	—	—	50	21	28	—	14	57	28	—	—	10	50	24	14	—	14	46	36	04	—
83	—	07	28	50	14	07	07	36	36	14	07	07	36	43	07	—	21	21	70	07	04	07	32	46	10	04	18	28	53	10
84	07	14	21	43	14	07	28	28	21	14	07	07	36	43	07	—	28	57	07	07	07	10	28	43	10	04	28	42	14	10
85	07	64	21	07	—	—	50	36	14	—	21	43	21	14	—	14	50	28	07	—	14	54	21	10	—	07	50	32	10	—
86	57	43	—	—	—	50	28	07	14	—	36	50	07	07	—	50	21	21	07	—	46	46	04	04	—	50	24	14	10	—
87	—	—	28	50	21	07	14	07	64	07	—	—	50	28	21	—	21	43	21	14	—	—	39	39	21	04	18	25	42	10
88	—	07	21	50	21	07	14	21	36	21	—	07	28	36	28	—	21	36	21	21	—	07	24	43	24	04	18	28	28	21
89	07	71	—	14	07	07	36	43	14	—	36	50	14	—	—	07	36	43	14	—	22	60	07	07	04	07	36	43	14	—
90	—	14	36	28	21	—	14	14	57	14	—	07	36	50	07	07	—	21	57	14	—	10	36	39	14	04	07	18	57	14
91	28	28	21	21	—	21	21	50	—	07	36	21	28	14	—	—	50	28	21	—	32	24	24	18	—	10	36	39	10	04
92	14	50	21	14	—	14	50	07	28	—	14	43	28	14	—	28	36	28	07	—	14	46	24	14	—	21	43	18	18	—
93	—	14	36	36	14	—	28	28	21	21	—	07	07	71	14	—	14	36	36	14	—	10	21	54	14	—	—	21	32	28	18
94	07	50	21	21	—	28	28	28	14	—	—	36	57	07	—	07	36	28	28	—	04	43	39	14	—	18	32	28	21	—
95	—	28	36	36	—	07	36	21	36	—	—	07	57	36	—	07	28	43	21	—	—	18	46	36	—	07	32	32	28	—
96	28	07	36	28	—	07	21	36	28	07	07	50	28	07	07	14	21	36	21	07	18	28	32	18	04	10	21	36	24	07
97	07	36	36	14	07	43	36	07	14	—	14	50	14	14	07	21	57	14	07	—	10	43	25	14	07	32	46	10	10	—
98	—	—	14	36	50	07	28	07	28	28	—	—	21	14	64	07	21	14	21	36	—	—	18	25	57	07	24	10	24	32
99	—	36	28	21	07	07	50	36	07	—	07	36	36	21	—	28	21	28	21	—	04	36	32	21	04	18	36	32	14	—
100	14	36	36	14	—	21	21	57	—	—	07	57	21	14	—	—	28	43	28	—	10	46	28	14	—	10	24	50	14	—

Table 6

Per Cent Ss Assigning Ranks to Each Statement

Summarized for All Conditions (N=28)

	Distribution of Ranks											
	Ranks 1 - 2				Rank 3				Ranks 4 - 5			
	75% or better	50 -	25 -	0 - 24%	75% or better	50 - 74%	25 - 49%	0 - 24%	75% or better	50 - 74%	25 - 49%	0 - 24%
1. Fews make home book old professors man.			x				x				x	
2. With drink the young knowledge primarily especially amongs.			x				x				x	
3. Whiskeys straws wine makes daughters.				x			x				x	
4. Young young buildings grow less hole milk.				x				x		x		
5. Meal sand soldier wine after the.			x				x					x
6. Show rice wine daughters delicious home.			x				x				x	
7. New show these extremely.			x				x				x	
8. Rices above a.			x				x				x	
9. Intelligence news good deliciouses many strong.		x						x				x
10. Extremely primarily beautiful foods food windows lakes.		x						x				x
11. The milk those rice.		x					x					x
12. Around milk paint around.		x					x			x		
13. Around drink machines windows more book the jobs.				x			x				x	
14. Many especiallys big ugly machineseses.	x							x				x
15. Help quiteses extremely windows paint lady sand.		x						x				x
16. During sand paint essentials good man above big.		x					x					x
17. Verys.			x					x			x	
18. Make among.			x					x		x		

Table 6 (Continued)

Per Cent Os Assigning Ranks to Each Statement
Summarized for All Conditions (N=28)

		Distribution of Ranks											
		Ranks 1 - 2				Rank 3				Ranks 4 - 5			
		75% or better	50 - 74%	25 - 49%	0 - 24%	75% or better	50 - 74%	25 - 49%	0 - 24%	75% or better	50 - 74%	25 - 49%	0 - 24%
19.	Group deliciouses paint some outside.			x					x			x	
20.	Lady sand through grow soldiers.			x				x				x	
21.	Home dishes.				x				x		x		
22.	Eats.				x				x		x		
23.	Food those during woods thoses.	x							x				x
24.	Old rice good delicious grow strong eat.		x					x					x
25.	With professors lakes drink.				x				x		x		
26.	Seven seven man seven machines view.			x				x					x
27.	Make delicious eats.				x			x		x			
28.	Through prefer few delicious			x				x					x
29.	Professors group group.				x			x				x	
30.	Quite dishes meal after.		x					x					x
31.	Food show.				x				x		x		
32.	Above wine.				x				x		x		
33.	Man grows soldiers among several.				x			x				x	
34.	Help view daughters ins whiskey dishes.			x				x				x	
35.	Home make rices showseses intelligence.		x					x					x
36.	Quite jobs strong machines very drinks straw help.		x					x					x
37.	Very with make extremely the windowses		x					x					x
38.	Newses very delicious man.		x					x					x
39.	Grow makes rice.				x			x				x	
40.	Building quite soldiers.			x				x					x

Table 6 (Continued)

Per Cent Ss Assigning Ranks to Each Statement
Summarized for All Conditions (N=28)

	Distribution of Ranks											
	Ranks 1 - 2				Rank 3				Ranks 4 - 5			
	75% or better	50	25	0 - 24%	75% or better	50	25	0 - 24%	75% or better	50	25	0 - 24%
41. Especially old.			x					x		x		
42. Lakeses.		x					x					x
43. Rices greens grow view.				x			x				x	
44. Around above lady like fields lady.			x				x				x	
45. Book bigs during green prefer jobses.			x				x				x	
46. Prefers daughters groups the drinks.			x				x				x	
47. Woods.			x					x		x		
48. Machines classes.			x				x				x	
49. With outside show classes help.				x				x	x			
50. Classes machines building intelligence especially.			x				x				x	
51. Soldier group makeses wood man disheses.			x				x					x
52. Simply paint make with these daughters news group.			x				x					x
53. Home steel classes.				x				x		x		
54. Beautifuls extremely.		x					x					x
55. This book daughters.				x			x			x		
56. Lakes new totally.				x			x				x	
57. Someses like lakes few windows ugly.		x						x				x
58. Food strong simplyseseseses.	x							x				x
59. Strong very through grows a jobs very.		x						x			x	
60. Outside very less sand help less strong ugly.		x					x					x
61. The beyond knowledge thoses building seven intelligence.			x				x				x	

Table 6 (Continued)

Per Cent Ss Assigning Ranks to Each Statement
Summarized for All Conditions (N=28)

	Distribution of Ranks											
	Ranks 1 - 2				Rank 3				Ranks 4 - 5			
	75% or better	50 - 74%	25 - 49%	0 - 24%	75% or better	50 - 74%	25 - 49%	0 - 24%	75% or better	50 - 74%	25 - 49%	0 - 24%
62. Windowses holes arounds help primarily.			x				x					x
63. Paint especiallys.			x				x					x
64. Essentials dishes jobs.			x				x					x
65. After totally.			x					x			x	
66. Buildings.			x					x		x		
67. Windows intelligences strong soldier seven hole intelligence.		x						x				x
68. After some especially help lady daughters new sand.			x				x				x	
69. Big home.				x				x		x		
70. Those several.			x				x				x	
71. Beyond primarily seven fields this.			x					x			x	
72. Prefer intelligence grow big make.			x				x				x	
73. View group intelligences.				x			x			x		
74. Beautifuls young man.			x				x					x
75. Especially a sand helps these extremely view the.			x				x				x	
76. Lesses cat totally thoses with beautiful these.		x						x			x	
77. Prefer jobs less man.			x				x				x	
78. Green primarily especially wood.			x				x				x	
79. Several rice during book outside hole.			x				x				x	
80. Quite throughses prefer daughters.			x					x			x	
81. Help outside whiskey professor good extremelys with.		x					x					x

Table 6 (Continued)

Per Cent Ss Assigning Ranks to Each Statement
Summarized for All Conditions (N=28)

		Distribution of Ranks											
		Ranks 1 - 2				Rank 3				Ranks 4 - 5			
		75% or better	50 - 25 - 0 -			75% or better	50 - 25 - 0 -			75% or better	50 - 25 - 0 -		
			74%	49%	24%		74%	49%	24%		74%	49%	24%
82.	More amongs classes windowses above big.		x					x					x
83.	Steel fields knowledge eat wood.				x			x			x		
84.	In shows seven around.				x			x				x	
85.	Prefer building daughters meal classes few withs meal.		x					x					x
86.	Whiskeys buildingseses jobses daughters.								x				x
87.	Classes beyond with green.				x			x			x		
88.	Machines seven the home.				x			x			x		
89.	Uglys prefer good a these deliciouseses.		x					x					x
90.	Few beyond fields simply book after big hole.				x			x			x		
91.	After help machines disheses mores buildings.			x				x					x
92.	Aboves soldier several group professor foods ugly.		x						x				x
93.	Group seven simply green.				x			x			x		
94.	Above bigs meal.			x				x					x
95.	Show after several help professors above.			x				x				x	
96.	Seven preferseses good view.			x				x				x	
97.	Verys.		x						x				x
98.	With wine.				x				x		x		
99.	Several theses prefer eat group simply simply.			x				x					x
100.	Strong the meal drink during quite classeses.			x				x					x
	TOTAL	4	24	46	26	0	0	68	32	2	24	36	38

Table 7

Overall Correlations Between Preference and Rank for the Four Experimental Conditions

Condition	r*
Day 1 - Order 1	.681
Day 2 - Order 1	.804
Day 1 - Order 2	.444
Day 2 - Order 2	.622

*all r's significant at or beyond the .01 level of confidence

Table 8

Correlations Between Ranks for Days and Orders

Condition	r*
Day 1 - Order 1 and Order 2	.753
Day 2 - Order 1 and Order 2	.669
Order 1 - Day 1 and Day 2	.820
Order 2 - Day 1 and Day 2	.699

*all r's significant at or beyond the .01 level of confidence