

A Comparison Of Auditory Comprehension Tasks In Aphasia

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Comprehension of spoken language is the principal process relating to language disruption in aphasia (Schuell, in Sies, 1974). Paradoxically, the important and pervasive nature of disordered comprehension in aphasia is not reflected in the level of sophistication of our diagnosis of this problem. Brookshire (1973) noted that aphasia tests may be too difficult for severely impaired patients and too easy for minimally involved patients. This observation was confirmed by Needham and Swisher (1972) with regard to several tests of auditory comprehension. Berry (1976) also recognized the limitations of our auditory comprehension evaluation procedures.

Not all aphasia examinations assess a limited range of behaviors. Examinations, such as The Minnesota Test for Differential Diagnosis of Aphasia (Schuell, 1965) and The Boston Diagnostic Aphasia Examination (Goodglass and Kaplan, 1972), sample a broad range of auditory receptive abilities. Like most aphasia tests, however, the heterogeneous design of these examinations decreases the reliability of test results. The scoring methods utilized with these examinations, for example, rely on written descriptions of patient behaviors observed during testing. Response recording procedures which rely on such methods are subjective and less sensitive and reliable than objective scoring procedures (Porch, 1967, 1971; Brookshire, (1973).

One examination, The Porch Index of Communicative Ability (PICA) (Porch, 1967) has overcome design inadequacies common to most aphasia tests by adopting a homogeneous test design and a sophisticated multidimensional scoring system. The PICA, however, has several limitations which are specific to assessment of auditory comprehension abilities. First, it contains only two auditory subtests (point to common objects by name and function). Secondly, close examination of the mean score performance of the large group of aphasic patients upon which the test was standardized reveals that the auditory subtests sample approximately the same level of processing abilities. (Only .36 separates the mean scores of Porch's aphasic patients on PICA auditory subtests [Porch, 1967, Appendix C].) Finally, PICA auditory tasks do not appear to cover a wide range of severity levels. That is, patients from the 45th to the 99th percentile on the PICA perform equally well on the two auditory subtests of this test (mean score 14.0 to 15.0).

Purpose

The purpose of this study was to examine the relative degree of difficulty of 13 auditory comprehension tasks for a heterogeneous group of adult aphasic subjects. These questions were asked:

1. Are there significant differences in the difficulty levels of these comprehension tasks for subjects representing a wide range of aphasic involvement?
2. If significant differences do exist between these tasks, what is the order of task difficulty?

Method

Task Selection

The tasks selected for use in this study were taken primarily from tests currently being used to assess the auditory comprehension skills of children, and of adult aphasic patients. Tasks were abstracted from the PICA (Tests VI, X). Several of these tasks were lengthened and subsequently added to the test battery. Additional tasks were also examined (Appendix A).

Although the relative degree of difficulty of these tasks was unknown, they were thought to cover a wide range of difficulty levels.

Subjects

Subjects (N=10) ranged in age from 35 to 80 years, with a mean age of 54 years. The range in months post-onset of aphasia was from seven to 76 months, with an average of 28 months. All subjects were male, and nine were aphasic due to cerebral vascular accidents. One subject had a traumatic etiology. Subjects were selected from patients who were receiving treatment in Speech Pathology Service at the Kansas City Veteran's Administration Hospital. Each met the following selection criteria:

1. A diagnosis of aphasia as determined by the Porch Index of Communicative Ability (see Appendix B for summary of individual performances).
2. At least six months post-onset of aphasia.
3. A score of 13 or above on PICA visual matching subtests (VIII and XI).
4. Pure tone thresholds for hearing no greater than 20 dB (ISO) at 500 Hz, 1000 Hz, and 2000 Hz.

Procedure

The PICA test format, including standard introductory remarks, stimulus items, and the use of specified repeats and cues, was adopted for this study, and the PICA scoring system was utilized to score subject responses. Scoring notes from the PICAC manual (Vol. 2) were taken into account when scoring sequential tasks.¹

¹ Scoring synopsis: (see Porch, 1974, for further details)

15 = + objects; + act; + sequence

12 = + objects; + act; + sequence

7 = + objects; = act

6 = - object

All subjects completed the task battery in one session which lasted an average of 34 minutes. The same examiner administered all tests and the order of task presentation was randomized for each subject.

Results

Reliability

Videotape recordings of the administrations of the 13 auditory tasks for two subjects were selected at random for determining scorer reliability. The percentage of cell agreement between the experimenter's scores and an independent reliability judge's scores was 93%.

Mean Score Analysis

Prior to statistical analysis of the data, a mean score was computed for each subject on each of the 13 subtests. From these data it was possible to rank the subtests from least to most difficult. This mean score hierarchy is shown in Table 1. Tasks ranged in difficulty from 14.30 for the least difficult task, "Point to one common object by name", to 7.53 for the most difficult task, "Follow three sequential verb instructions" (see Appendix C for individual performances). One might also note that the subjects' mean scores clustered at several levels of difficulty.

Significant Differences in Task Difficulty

The first experimental question examined differences in difficulty between these auditory comprehension tasks for subjects representing a wide range of involvement. The Friedman test (Conover, 1971) was used to examine overall differences in the difficulty levels of the 13 tasks. This analysis resulted in significant overall differences at the .001 level ($T=79.15$; $X^2_{12}=32.91$). In addition, the K sample Sign Test (Miller, 1966) was utilized for post hoc examination of between task comparisons. Significant results were obtained from 27 of 78 pair-wise comparisons at the .05 level (see Appendix D).

Order of Difficulty of Significantly Different Auditory Tasks.

The second experimental question was concerned with the order of difficulty of the auditory tasks. A hierarchical arrangement of tasks required that each be significantly different from all other tasks. Four tasks could be rank ordered in terms of difficulty. These are listed from least to most difficult in Table 2.

In addition to the four ranked auditory tasks, several distinguishable clusters of tasks at various levels of difficulty were also identified by examination of the pair-wise comparisons.

The three least difficult tasks, (I,II,III), while not significantly different from one another, were each significantly different from the three most difficult tasks in the study (XI,XII,XIII). Tasks which ranked IV through VIII in mean difficulty were statistically equivalent, yet, each was significantly different from tasks in both the least difficult group. (I,II,III), and the most difficult group (XI,XII,XIII).

Tasks IX and X were the least discriminating of the tasks studied. They were statistically equivalent to nearly all other tasks (refer to Table I).

Subject's Agreement in Ranking of the Auditory Tasks

The agreement in rankings of the subject's performances were examined. A moderate correlation (Kendal $W=.66$) was found between the rank order of patient performances on the auditory tasks, indicating substantial agreement between subjects as to the order of difficulty of the 13 tasks.

Discussion

Hierarchy of Significantly Different Tasks

One significant outcome of this study was the delineation of a four-task hierarchy of significantly different, progressively more difficult auditory tasks. The easiest task in this hierarchy, "Point to one common object by function", is the same as subtest VI of the PICA. Eight of the subjects in the study earned a mean score of 14.0 or higher on this task. The fact that this task did not discriminate subjects with mild to moderate auditory comprehension deficits is consistent with the data presented by Porch (1967), for subtest VI of the PICA. Subjects in Porch's sample having overall performance levels on the PICA as low as the 45th percentile achieved a mean score of 14.0 on this task.

In addition to being the least difficult and the least discriminating task in the hierarchy, "Point to one common object by function" (PICA VI), was not statistically different from "Point to common objects by name", subtest X of the PICA. This preliminary finding is supported by the fact that very small, statistically non-significant differences were found between the mean scores of "Point to common objects by name", and "Point to common objects by function", even as the number of critical elements in the command were increased to two (tasks III and IV), and three (tasks VIII and IX). These two tasks are of seemingly equal difficulty for mild to moderately impaired aphasic individuals. These data indicate that using both of these tasks to assess the auditory comprehension of subjects in this impairment range may be redundant.

The equivalence of these tasks, despite their similarities in length and lexical content, may be explained by the facilitative effects of redundant information. Perhaps the redundant information in the longer stimuli ("Point to common objects by function") offsets the deleterious effects one might expect the increased length to have on comprehension. Gardner, Albert and Weintraub (1975) report that adding redundant information may aid comprehension. Furthermore, Goodglass and Kaplan (1972) note that increasing the length of the stimulus does not cause a linear decrease in the comprehension of that stimulus. They state that both length and the number of significant informational elements in the command affect comprehension of that command.

The second task in the hierarchy of significantly different auditory tasks in this study was, "Point to two common objects sequentially by name". One might hypothesize that the increased number of significant informational elements in this task (i.e., elements necessary to correctly follow a command) contributed to its being more difficult than the first task, "Point to one common object by function". The higher level of discriminability of the second task in the hierarchy, as opposed to the first, is indicated by the fact that

four subjects scored above 14.0 on the latter task as opposed to eight who did so on the first.

The two remaining tasks in the statistical ranking required subjects to follow verb instructions. The third task required subjects to "Follow two sequential verb instructions". Only one subject received a mean score of 14.0 on this task, compared to four who did so on the second task in the hierarchy.

The most difficult task in the rank order of significantly different auditory tasks was "Follow three sequential verb instructions". Based on subjects' mean score performances, this was also the most difficult task in the study. It is interesting to note that this task was more difficult, in terms of mean scores, than "Following two verb instructions with an adverbial time constraint" (task XII), which is similar to tasks from the notoriously difficult Token test. One might conclude from these results that following multiple verb instructions is a very difficult task for aphasic subjects.

A final observation about the four significantly different auditory tasks is appropriate. There may be little loss of information in administering these four tasks as opposed to the total 13 tasks used in this study. An examination of subjects' mean scores for all 13 tasks, compared to their mean scores for these four tasks, reveals very little difference between them, as seen in Table 3. The mean difference score is .21 for the 10 subjects in this study.

It appears that these four tasks may be potentially useful as a screening battery for assessing auditory comprehension abilities of aphasic patients. They are significantly different and progressively more difficult, and they can be administered in a relatively brief period of time. (The combined average presentation time for these tasks in this study was 11 minutes.) These tasks might also be useful as periodic probes of treatment progress.

Task Clusters

There was a tendency for tasks to cluster at several levels of difficulty. This is evident from an examination of the significant differences which were apparent between the pair-wise comparisons (see Appendix D). The three least difficult tasks (I, II, III) were statistically equivalent and each was significantly different from the three most difficult tasks (XI, XII, XIII). Mid-range tasks IV through VIII were statistically equivalent but each was significantly different from one or more tasks in both the difficult and easy ends of the hierarchy. These results indicated that these tasks should be further examined as potential components in an auditory comprehension task hierarchy for assessment of aphasic patients. Unlike many standard aphasia tests, further delineation of these tasks would function as a helpful adjunct to treatment planning and therapeutic intervention. A rank order of tasks would provide a logical point at which to initiate treatment and indicate a task sequence which could be followed during the clinical process. If the tasks in this study are not further differentiated after replication with a larger subject population, then tasks for which no significant differences were found could be used concurrently in treatment. In either event, the clustering of tasks at various levels of difficulty provides some justification for task selection, until further research is able to more clearly define an order of difficulty of auditory comprehension tasks for evaluating and treating aphasic individuals.

Further Research

The results of this study indicated general levels of task difficulty, as well as a four-task hierarchy which may contribute to assessment and treatment techniques for aphasic individuals with auditory comprehension difficulties. However, further research is needed in this area to determine whether the preliminary findings of this study will be supported, and to develop a more comprehensive test battery for measuring auditory processing deficits in aphasia. Additionally, future studies may wish to examine the role of auditory memory span of aphasic patients for the sequentially ordered tasks in this study.

Bibliography

- Berry, Wm. Testing auditory comprehension in aphasia: Clinical alternatives to the Token Test. In Brookshire, R. (ed.). Clinical Aphasiology Conference Proceedings. Minneapolis, MN.: BRK Publishers 1976.
- Brookshire, R.H. An Introduction to Aphasia. Minneapolis, MN.: BRK Publishers 1973.
- Conover, W.J. Practical Nonparametric Statistics. New York, NY.: John Wiley and Sons, Inc. 1971.
- DeRenzi, E., and Vignolo, L.A. The Token Test: A sensitive test to detect receptive disturbances in aphasics. Brain, 85:655-678, 1962.
- Gardner, H., Albert, M.L., and Weintraub, S. Comprehending a word: The influence of speed and redundancy on auditory comprehension in aphasia. Cortex, 11:155-162, 1975.
- Goodglass, H.S., and Kaplan, E., The Assessment of Aphasia and Related Disorders. Philadelphia: Lea and Febiger, 1972.
- Miller, R.G., Simultaneous Statistical Inference, New York, NY: McGraw-Hill Book Co., 1966.
- Needham, L., and Swisher, L.P. A comparison of three tests of auditory comprehension for adult aphasics. J. Speech Hearing Dis., 37:123-131, 1972.
- Porch, B.E. Porch Index of Communicative Ability, Vol. 1, Theory and Development. Palo Alto, CA.: Consulting Psychologist Press, 1967.
- Porch, B.E. Porch Index of Communicative Ability, Vol. 2, Administration, Scoring and Interpretation. Palo Alto, CA.: Consulting Psychologists Press, 1967.
- Porch, B.E. Multidimensional scoring in aphasia testing. J. Speech Hearing Res., 14, 776-792, 1971.
- Schuell, H. Minnesota Test for Differential Diagnosis of Aphasia (rev. ed.). Minneapolis, MN.: University of Minnesota Press, 1965.
- Sies, L.F. (ed.). Aphasia Theory and Therapy, Selected Papers and Lectures of Hildred Schuell. Baltimore, MD.: University Park Press, 1974.

Appendix A

Thirteen Auditory Comprehension Tasks

I. "Now I'll say the name of each one and you point to it. (Demonstrate.)
Point to the ..."

1. Toothbrush
2. Cigarette
3. Pen
4. Knife
5. Fork
6. Quarter
7. Pencil
8. Matches
9. Key
10. Comb

Cue: "Where is the _____?"

II. "Point". (Demonstrate to the one used...)

1. For cleaning teeth
2. For smoking
3. With ink
4. For cutting meat
5. For picking up food
6. For buying things
7. For writing and erasing
8. For lighting fires
9. For locking doors
10. For fixing hair

Cue: "Which one do you use _____?"

III. Instruction: "I'm going to say what some of these (gesture) are used for. Point to (demonstrate) them just the way I say them."

1. Cleaning teeth... For smoking
2. For smoking... With ink
3. With ink... For cutting meat
4. For cutting meat... For picking up food
5. For picking up food... For buying things
6. For buying things... For writing and erasing
7. For writing and erasing... For lighting fires
8. For lighting fires... For locking doors
9. For locking doors... For fixing hair
10. For fixing hair... For cleaning teeth

Cue: "Which ones are used for _____?"

IV. Instruction: "Now I'm going to say the names of some of these (gesture) and I want you to point to them (demonstrate) just the way I say them.

1. Toothbrush... Cigarette
2. Cigarette... Pen
3. Pen... Knife
4. Knife... Fork
5. Fork... Quarter
6. Quarter... Pencil
7. Pencil... Matches
8. Matches... Key
9. Key... Comb
10. Comb... Toothbrush

Cue: "Point (demonstrate) to the _____ and _____."

V. Instruction: "Show me the one (gesture) I'm spelling."

1. T-o-o-t-h-b-r-u-s-h
2. C-i-g-a-r-e-t-t-e
3. P-e-n
4. K-n-i-f-e
5. F-o-r-k
6. Q-u-a-r-t-e-r
7. P-e-n-c-i-l
8. M-a-t-c-h-e-s
9. K-e-y
10. C-o-m-b

Cue: Pause approximately one second between each letter.

VI. Instruction: "I'm going to tell you about these objects (gesture). Point (demonstrate) to the one I'm talking about. Which one is...?"

1. White, plastic and has bristles
2. White, with tobacco and filter
3. Black, with ink and a silver top
4. Silver, with a blade and handle
5. Silver, with prongs and a handle
6. Silver, round and has two sides.
7. Wooden, has red tips and are in a box
8. Yellow, has lead and an eraser
9. Metal, small and has edges
10. Black, plastic and has teeth

Cue: Point (demonstrate) to the one that is...

VII. Instruction: "I'm going to ask you to do some things. Listen carefully and do just what I tell you to do."

1. Touch the toothbrush
2. Hand me the cigarette
3. Pick up the pen
4. Point to the knife
5. Turn over the fork
6. Touch the pencil
7. Hand me the quarter
8. Pick up the matches
9. Point to the key
10. Turn over the comb

Cue: Repeat the command.

VIII. Instruction: "Now I'm going to say the names of some of these (gesture) and I want you to point to them (demonstrate) just the way I say them. Wait until after I say all of them and then point to them."

1. Toothbrush...Cigarette... Pen
2. Cigarette... Pen... Knife
3. Pen... Knife... Fork
4. Knife... Fork... Quarter
5. Fork... Quarter... Pencil
6. Quarter... Pencil...Matches
7. Pencil... Matches... Key
8. Matches... Key... Comb
9. Key... Comb... Toothbrush
10. Comb... Toothbrush... Cigarette

Cue: "O.K., listen again and point to them (demonstrate) just the way I say them."

IX. Instruction: "I'm going to say what some of these (gesture) are used for. Point (demonstrate) to them just the way I say them."

1. Cleaning teeth...For smoking...With ink
2. For smoking...With ink...For cutting meat
3. With ink...For cutting meat...For picking up food
4. For cutting meat... For picking up food...For buying things
5. For picking up food... For buying things...For writing and erasing
6. For buying things...For writing and erasing...For lighting fires
7. For writing and erasing...For lighting fires...For locking doors
8. For lighting fires...For locking doors...For fixing hair
9. For locking doors...For fixing hair...For cleaning teeth
10. For fixing hair...For cleaning teeth...For smoking

Cue: "Which ones are used for _____?"

X. Instruction: "Now listen again. Do just what I say. Put the..."

1. Toothbrush on top of the cigarette
2. Cigarette next to the pen
3. Pen in front of the knife
4. Knife under the fork
5. Fork beneath the quarter
6. Quarter to the left of the pencil
7. Pencil between pen and matches
8. Matches to the right of the key
9. Key above the comb
10. Comb beside the toothbrush

Cue: "Where is the _____, put it _____."

XI. Instruction: "I'm going to ask you to do some things. Listen carefully, and do them in the same order I say them."

1. Touch the toothbrush...Hand me the cigarette
2. Hand me the cigarette...Pick up the pen
3. Pick up the pen...Point to the knife
4. Point to the knife...Turn over the fork
5. Turn over the fork...Touch the pencil
6. Touch the pencil...Hand me the quarter
7. Hand me the quarter...Pick up the matches
8. Pick up the matches...Point to the key
9. Point to the key...Turn over the comb
10. Turn over the comb...Touch the toothbrush

Cue: Repeat the commands only.

XII. Instructions: "I'm going to tell you to do some more things. Listen carefully and do just what I tell you to do".

1. Before you touch the toothbrush, pick up the cigarette
2. Hand me the cigarette after you point to the pen
3. Turn over the pen after you touch the knife
4. Before you pick up the knife, hand me the fork
5. Point to the fork, after you turn over the quarter
6. Before you touch the quarter, pick up the pencil
7. Hand me the pencil, after you point to the matches
8. Before you turn over the matches, touch the key
9. Pick up the key after you hand me the comb
10. Before you point to the comb, turn over the toothbrush

Cue: Say second part of cue, repeat item.

XIII. Instruction: "Listen again. Try to do the things I ask, in the way I say them. Wait until I stop talking."

1. Touch the toothbrush...Hand me the cigarette...Pick up the pen
2. Hand me the cigarette...Pick up the pen...Point to the knife
3. Pick up the pen...Point to the knife...Turn over the fork
4. Point to the knife...Turn over the fork...Touch the pencil
5. Turn over the fork...Touch the pencil...Hand me the quarter
6. Touch the pencil...Hand me the quarter...Pick up the matches
7. Hand me the quarter...Pick up the matches...Point to the key
8. Pick up the matches...Point to the key...Turn over the comb
9. Point to the key...Turn over the comb...Touch the toothbrush
10. Turn over the comb...Touch the toothbrush...Hand me the cigarette

Cue: Repeat the commands only.

Appendix B

Subject Performances On Porch Index of Communicative Ability

<u>Subject</u>	<u>Overall Score</u>	<u>Percentile</u>	<u>VI</u>	<u>X</u>
C.V.	13.12	83	15	14.8
J.M.	13.03	81	13	13
J.H.	12.99	80	13.3	13.8
E.A.	12.76	76	15	15
L.H.	12.72	76	15	15
N.S.	12.39	73	15	15
R.R.	11.94	67	14.8	14.4
J.P.	10.24	46	12.1	12.0
O.N.	8.28	29	14.10	14.6
E.K.	4.66	5	6.9	11.0

Appendix C

Mean Performance Of Subjects On The 13 Auditory Tasks

Subj.	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII
L.H.	15.0	15.0	14.0	15.0	13.4	13.8	15.0	14.1	13.4	14.0	14.0	12.8	9.4
R.R.	15.0	14.2	12.7	14.1	11.7	12.7	15.0	11.1	14.6	13.2	11.4	9.4	8.6
E.A.	14.4	15.0	14.2	15.0	14.3	13.6	9.1	14.2	13.0	12.6	12.2	9.1	9.2
C.V.	15.0	14.8	15.0	13.2	14.2	14.0	12.6	14.1	13.9	12.3	11.3	6.3	8.0
J.M.	15.0	14.4	12.6	13.3	13.2	11.2	11.8	10.0	9.3	8.1	7.6	6.8	6.5
J.H.	13.9	14.4	14.4	11.1	13.4	9.7	12.3	11.0	12.2	11.3	7.5	11.4	6.3
E.K.	10.3	9.6	7.2	8.2	7.3	7.4	8.2	5.1	5.1	3.8	6.4	5.3	5.3
O.N.	14.1	15.0	14.1	12.3	13.4	13.3	13.1	0.5	7.7	8.3	8.4	9.0	6.2
J.P.	13.6	12.8	9.8	10.5	9.2	12.0	8.4	8.8	7.3	6.0	6.1	6.9	6.0
N.S.	15.0	15.0	15.0	14.0	15.0	14.6	15.0	9.4	10.7	12.4	12.8	9.0	9.8
Task Means:	14.30	14.02	12.9	12.67	12.51	12.23	12.05	10.74	10.72	10.20	9.77	8.60	7.53

Appendix D

Pair-Wise Comparisons Of Thirteen Auditory Tasks For Ten Aphasic Subjects

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII
I	5/8	6/7	8/9	10/10*	10/10*	7/7*	10/10*	10/10*	10/10*	10/10*	10/10*	10/10*	10/10*
II		7/8	8/8*	9/9*	10/10*	7/8	10/10*	9/10	9/10	10/10*	10/10*	10/10*	10/10*
III			4/10	6/9	7/9	6/9	8/9	9/10	9/10	8/9	9/9*	10/10*	10/10*
IV				6/10	6/10	9/10	9/10	7/10	7/10	9/10	10/10*	9/10	10/10*
V					6/10	6/9	9/10	8/9	8/9	8/10	9/10	10/10*	10/10*
VI						4/10	6/10	8/10	8/10	8/10	9/10	9/10	10/10*
VII							8/10	9/10	9/10	9/10	9/10	10/10*	9/10
VIII								6/9	6/9	7/10	7/10	8/10	8/10
IX										8/10	6/10	8/10	9/10
X											6/9	6/10	9/10
XI												7/10	10/10*
XII													7/9
XIII													

* Indicates significant at the .05 level (Miller, 1966).

Table 1. Mean Score Hierarchy Of Task Difficulty

Rank	Task	Mean
I	Point to one common object by name	14.30
II	Point to one common object by function	14.02
III	Point to two common objects in sequence by function	12.90
IV	Point to two common objects in sequence by name	12.67
V	Point to one common object when spelled	12.51
VI	Point to one common object when described	12.23
VII	Follow one verb instruction	12.05
VIII	Point to three common objects in sequence by name	10.74
IX	Point to three common objects in sequence by function	10.72
X	Follow a prepositional instruction	10.20
XI	Follow two verb instructions	9.77
XII	Follow two verb instructions with an adverbial time constraint	8.60
XIII	Follow three verb instructions	7.53

Table 2. Significantly Different Auditory Tasks, Their Rank Among All Tasks, And The Subject's Overall Mean Scores For Each Task

Task	Overall Rank	Mean
Point to one common object by function	II	14.02
Point to two common objects in sequence by name	IV	12.67
Follow two sequential verb instructions	XI	9.77
Follow three sequential verb instructions	XIII	7.53

Table 3. Ten Subject's Mean Scores On 13 Auditory Tasks, Their Mean Scores On Four Significantly Different Tasks And The Difference Scores

Subject	Mean Score For 13 Tasks	Mean Score For 4 Tasks	Difference
L.H.	13.76	13.35	.31
N.S.	12.90	12.90	.00
E.A.	12.76	12.83	-.09
C.V.	12.66	11.83	-.83
R.R.	12.60	12.08	.52
J.H.	11.45	9.83	1.62
O.N.	11.10	10.48	.62
J.M.	10.75	10.45	.30
J.P.	9.03	8.85	.18
E.K.	6.68	7.73	-.49