

APPENDIX D

STRUCTURE OF RAW DATA FILES

The CALCAP program generates detailed records of all responses to the reaction time stimuli. Data are stored in a file named *subj#-xx.dat*. Where *subj#* is the subject number (maximum of 5 digits) and *xx* is an encrypted code representing the date when the subject was tested.

These files can be condensed by using the SHORTEN utility program. See Appendix E for a description of the data file structure for files that have been SHORTENed.

Raw Data Files

Each CALCAP data file consists of 4 sections: (1) a header record with relevant demographic

information; (2) individual records for each simple reaction time task; (3) individual records for each choice reaction time task; and (4) a closing record indicating the total amount of time elapsed.

The number of lines varies as a function of the number of reaction time tasks that are administered. These sections are described in greater detail below. All lines show the subject number and visit number in the following format:

<u>Description</u>	<u>Columns</u>
Subject Number	01-05
Visit Number	07-09

The remaining elements of the CALCAP data files are detailed below:

I. Header Record

A. Clinical Information Section (5 lines). Note that this section is optional and is not included in all versions of the CALCAP program.

<u>Line #</u>	<u>Description</u>	<u>Columns</u>	<u>Legal Values/Codes</u>
1	Not used		
2	Site Identification Text	20-59	The site identification description that is entered by using the RTCONFIG utility (default value is GENERIC).
3	Medical Record # Text	20-77	Information about patient name or medical record number entered by the examiner on the screen for collecting demographic information.
4	Diagnosis Text	20-82	Information about patient diagnosis entered by the examiner on the screen for collecting demographic information.
5	Misc Text Notes	20-81	Miscellaneous notes entered by the examiner on the screen for collecting demographic information.

B. CALCAP Host Computer Information/Subject Demographics Section (3 lines)

<u>Line #</u>	<u>Description</u>	<u>Columns</u>	<u>Legal Values/Codes</u>
1	Site Identification Number	20-21	01-99
1	Delay.Resolution	23-28	Resolution of choice reaction time timing circuit, in msec. This value is a function of the speed of the microprocessor.
1	Delay.Error	30-35	Average error in timing choice reaction time tasks, per msec. This value is a function of the design of the PC's internal timer (clock rate of 18.2 ticks per second) and the speed of the microprocessor. Note that timing for the CALCAP program is considerably more accurate than the PC's internal timer.*
1	Keyboard.Resolution	37-42	This value represents the average error in msec for timing keyboard responses for the simple reaction time tasks. This value is a function of the speed of the microprocessor and any idiosyncracies of the keyboard processor.
1	Display.Duration #1	44-49	Indicates the time required (in msec) to display and remove a single-digit stimulus target. This value is a function of the hardware characteristics of the video card and display and the speed of the microprocessor.
1	Display.Duration #5	51-56	Indicates the time required (in msec) to display and remove a five-digit stimulus target. This value is a function of the hardware characteristics of the video card and display and the speed of the microprocessor.
1	Exam Date: Month	58-59	01-12
	Day	61-62	01-31
	Year	64-67	1980-2050
1	Exam Time: Hour	69-70	00-23
	Minute	72-73	00-59
	Second	75-76	00-59
1	Name of Program Driver	78-89	
1	Version of CalCAP Program	91-96	blank before 09/2007; RT0907
2	Age	20-21	08-99
2	Gender	24	M = Male, F = Female

*Use the following formula to compute the actual error range (\pm xx msec) for choice RT tasks:

$$\text{Error range} = (\text{Task duration in msec}) * \text{Delay.Error} + \text{Delay.Resolution}$$

For example, if a task is supposed to last 1000 msec and Delay.Error = 0.0089 and Delay.Resolution = 1.12, then the accuracy of timing is equal to: $1000 * 0.0089 + 1.12 = 10.02$. Thus, Accuracy = 1000 msec \pm 10 msec.

B. CALCAP Host Computer Information/Subject Demographics Section (continued)

<u>Line #</u>	<u>Description</u>	<u>Columns</u>	<u>Legal Values/Codes</u>
2	Handedness	26	R = Right L = Left
2	Ethnicity	28	1 = Asian 2 = Black 3 = Hispanic 4 = American Indian 5 = White (not Hispanic) 6 = Other
2	Years of Education	30-31	06-20
2	Normal/Corrected Vision	33	N = Normal C = Corrected
2	Allergies	35	Y = Yes N = No
2	Occupation	37-66	
3	Reserved for future use		

II. Simple Reaction Time tasks (3 lines)

<u>Line #</u>	<u>Description</u>	<u>Columns</u>	<u>Legal Values/Codes</u>
1	Task Number	15-17	01 = Simple RT #1, 6 Trials 02 = Simple RT Nondominant, 6 Trials 06 = Simple RT #2, 6 Trials 10 = Simple RT #3, 6 Trials 15 = Simple RT #1, 15 Trials 18 = Simple RT #1, 12 Trials 19 = Simple RT Nondominant, 12 Trials 20 = Simple RT #2, 12 Trials 21 = Simple RT #3, 12 Trials
1	Task Type	20-21	01 = Simple Reaction Time
1	# of Failed Practice Trials	23-26	If task was aborted, this value is \$ 10.
1	Total Number of Trials	28-31	Total # of Simple RT Trials
1	Slow Error Trials	33-36	Not used
1	Total Number of Trials	38-41	Total # of Simple RT Trials
1	Minimum ISI	43-47	Minimum Inter-Stimulus-Interval
1	Maximum ISI	49-53	Maximum Inter-Stimulus-Interval

II. Simple Reaction Time tasks (continued)

<u>Line #</u>	<u>Description</u>	<u>Columns</u>	<u>Legal Values/Codes</u>
1	Random ISI indicator	55-57	00 = Use minimum ISI for all trials -1 = ISI varies randomly between minimum and maximum values.
2	Total Number of Trials	20-23	Total # of Simple RT Trials
2	Reaction Times for each each trial	26-29 31-34 36-39 41-44 46-49 . . etc.	Reaction Time, Trial 1 Reaction Time, Trial 2 Reaction Time, Trial 3 Reaction Time, Trial 4 Reaction Time, Trial 5 . . etc.
			<i>Note:</i> If a subject makes no response to an item, then the maximum presentation time is recorded. This value is equal to the sum of the Minimum and Maximum ISIs.
3	Total of all Rts	20-26	Sum of all RT trials
3	Mean RT	28-34	Mean of all RT trials
3	Fastest RT	36-39	Fastest Reaction Time
3	Slowest RT	41-44	Slowest Reaction Time
3	Range of RTs	46-49	Slowest minus fastest RT
3	Computed Reaction Time	51-57	Mean of all RT trials, excluding the best and worst trials (or, if there are more than 10 trials, excluding the 2 best and the 2 worst trials).

III. Choice Reaction Time tasks (6 lines)

<u>Line #</u>	<u>Description</u>	<u>Columns</u>	<u>Legal Values/Codes</u>
1	Task Number	15-17	03 = Basic Choice RT 04 = Sequential RT #1 05 = Lexical Discrimination 07 = Visual Selective Attention with Distraction 08 = Response Reversal and Rapid Visual Scanning 09 = Form Discrimination 11 = Recognition Memory 12 = 8088 version of Visual Selection Attention 13 = 8088 version of Response Reversal 14 = Sequential RT #2 16 = Basic Choice RT for CPT RT (200 trials) 17 = Sequential RT #1 for CPT RT (200 trials)

III. Choice Reaction Time tasks (continued)

<u>Line #</u>	<u>Description</u>	<u>Columns</u>	<u>Legal Values/Codes</u>
1	Task Type	20-21	02 = Choice Reaction Time 03 = Choice RT with Stimuli in both the center & periphery
1	# of Failed Practice Trials	23-26	If task was aborted, this value is \$ 10.
1	Total Number of Trials	28-31	Total # of Choice RT Trials
1	Minimum ISI	43-47	Minimum Inter-Stimulus-Interval
1	Maximum ISI	49-53	Maximum Inter-Stimulus-Interval
1	Random ISI indicator	55-57	00 = Use minimum ISI for all trials -1 = ISI varies randomly between minimum and maximum values.
1	Delay.Duration	59-62	<i>Not Currently Available.</i> When materials are presented both in the center of the screen and in the periphery, this number represents the amount of time (in msec) between the initial presentation of the materials in the periphery and the onset of display of the materials in the center of the screen.
1	Delay.Duration.2	64-67	<i>Not Currently Available.</i> When materials are presented both in the center of the screen and in the periphery, this number represents the amount of time (in msec) between when the materials in the center of the screen are removed and the removal of the materials in the periphery of the screen.
1	Stimulus Duration	69-76	Amount of time (in msec) that the target stimulus is displayed.
2	Reaction Times for each each trial	21-24 26-29 31-34 36-39 41-44 46-49 . . etc.	Reaction Time, Trial 1 Reaction Time, Trial 2 Reaction Time, Trial 3 Reaction Time, Trial 4 Reaction Time, Trial 5 Reaction Time, Trial 6 . . etc.
3	Total of all Rts	20-26	Sum of all RT trials
3	Mean RT	28-34	Mean of all RT trials

Note: If a subject makes no response to an item, then the maximum presentation time is recorded. This value is equal to the sum of the ISI and the Stimulus Duration, minus one half of the Display.Duration for the given target.

III. Choice Reaction Time tasks (continued)

<u>Line #</u>	<u>Description</u>	<u>Columns</u>	<u>Legal Values/Codes</u>
3	Fastest RT	36-39	Fastest Reaction Time
3	Slowest RT	41-44	Slowest Reaction Time
3	Range of RTs	46-49	Slowest minus fastest RT
3	Computed Reaction Time	51-57	Mean of all RT trials, excluding the 2 best and the 2 worst trials.
3	True Positive Responses	59-61	Total number of target stimuli where the subject correctly responded before the next stimulus was displayed.
3	False Negative Responses	63-65	Total number of target stimuli where the subject incorrectly made no response.
3	False Positive Responses	67-69	Total number of distractor stimuli where the subject incorrectly responded as though the target was displayed.
3	True Negative Responses	71-73	Total number of distractor stimuli where the subject correctly made no response.
4	d' (d prime)	20-28	Signal detection parameter of d'
4	A' (A prime)	30-38	Signal detection estimate of A'
4	Beta	40-48	Signal detection parameter β
5	Number of target stimuli	20-23	Total number of target stimuli
5	Accuracy on Target 1	25	0=Incorrect, 1=Correct
	Accuracy on Target 2	26	0=Incorrect, 1=Correct
	Accuracy on Target 3	27	0=Incorrect, 1=Correct
	Accuracy on Target 4	28	0=Incorrect, 1=Correct
	Accuracy on Target 5	29	0=Incorrect, 1=Correct
	.	.	.
	.	.	.
	etc.	etc.	etc.
6	# of distractor stimuli	20-23	Total number of distractor stimuli
6	Accuracy on Distractor 1	25	0=Incorrect, 1=Correct
	Accuracy on Distractor 2	26	0=Incorrect, 1=Correct
	Accuracy on Distractor 3	27	0=Incorrect, 1=Correct
	Accuracy on Distractor 4	28	0=Incorrect, 1=Correct
	Accuracy on Distractor 5	29	0=Incorrect, 1=Correct
	.	.	.
	.	.	.
	etc.	etc.	etc.

III. Choice Reaction Time tasks (continued)

Note: Recognition Memory (Task 11) is a special case of Choice Reaction Time where reaction times are irrelevant. Recognition Memory requires that the subject has seen the tasks for Lexical Discrimination and Visual Selective Attention.

IV. Closing Record (1 line)

<u>Line #</u>	<u>Description</u>	<u>Columns</u>	<u>Legal Values/Codes</u>
1	Elapsed Time	20-24	Elapsed time from beginning to end of RT tasks
1	Multi.Tasking	26-28	State of multi-tasking during program execution: -1 = Windows 386 Enhanced mode 0 = Neither Windows nor DOS shell active 1 = DOS Shell 2 = Windows Standard mode