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**Instructions for the use of RSPAN tasks**

A SPAN task is a cognitive tool designed to measure a person’s Working Memory. It involves processing one piece of information while trying to pay attention to another. In this case we are using an RSPAN (Reading Span) task, which involves reading a sentence and reporting if it makes sense, while trying to remember words presented after each sentence. At the end of each trial the participant types out all the words they can remember in the order they were presented. The more they correctly recall, the higher their Working Memory Capacity.

**RSPAN task download**

**Step 1.** Download RSPAN task file by using the link provided above. Click the link, and the task file will be downloaded to your computer. Once the task has been downloaded to your computer, move the file to desired location on your computer, for administration. Multiple copies of the task file can be made, simply copy/paste the task file to where you would like to be able to access it. There is no special software or operating system needed to run this task. Once the task file has been downloaded to your computer, you will be able to click the file to open the task. In our lab, we keep the RSPAN task in a folder named “Attention” that is kept on a desktop computer that is designated for data collection.

**RSPAN task administration**

**Step 2.** We have developed a set of instructions for the administration of the RSPAN tasks, these instructions are included below. For consistency, these instructions are used for all RSPAN data collection within the Emotion, Stress, and Relationships Lab, at Kent State University. We recommend using these instructions for administration of the RSPAN tasks. The ***bold and italicized*** font indicates script that is read aloud to the research participant, and the numbered step by step instructions indicate instructions for the research administrator. Additionally, in order to restore mood, given the emotional material used in the RSPAN-E task, we show participants two videos during administration of this task. This is also included in the below instructions.

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**R-SPAN:**

***“We are now going to begin an attention and memory task on the computer.”***

**Step 1**. Open the folder labeled “**Attention**” on the desktop.

**Step 2.** Double click the program labeled “Attention”. A black box will appear and will disappear after 10 seconds. After the program has loaded, click the “**Begin Experiment**” button.

**Step 3.** A box will appear that says “**What is the ID**?” This is the Participant ID # that was assigned to the participant (i.e. XXX). Type in the ID#, followed by an underscore and letter N. “N” corresponds to the version of the task that they will complete. After clicking “OK” the program will ask if what you entered is correct. If it is, click “yes”. If it isn’t, click “no”, and it will allow you enter the correct number.

**Step 4.** The next screen asks “**Which version**?” with a button labeled “E” and a button labeled “N”. **Begin with the RSPAN task labeled “N”.**

**Step 5.** Once you have clicked the correct version you will see a page of instructions. Leave this page up, and then, say:

***“This task will be testing attention and a type of your memory. These instructions, and the examples that follow, explain what you will be doing. Please make sure that you read everything carefully and let me know if you have any questions before you click to begin the task.”***

**Step 6.** Sit down and let the participant read the instructions and go through the examples on the screen. Answer any questions they may have.

**Step 7.** If they don’t have any questions, they can begin. The entire task should take 10-15 minutes. Before you leave the room, say:

***“I will now leave the room. Please call out when you are finished, I can hear you from the other room.”***

**Step 8.** When the participant has completed the task, a screen will pop up that says “You Have Finished this Task! Please See The Experimenter for Further Instructions.” At this time, they will call you and you can reenter the **Testing Room**. At this point, the data file has been saved and you can click the **Red X** in the top corner to close the program. In the “Attention” folder, you will see a text file labeled “**Emotion RSPAN data XXX\_N**.”

 ***“Great, now we are going to take a quick break and I’d like for you to watch this video. Please call out when the video has finished.”***

**Step 9.** Click on **“Funny Cats” video** located in the Attention folder and leave the testing room. Come back in about 3 minutes.

***“Now we are going to do another attention task similar to the one you completed before.”***

**Step 10.** Double click “**Attention**” program to open it. Click “Begin” and enter their Participant ID # followed by the letter “E” (i.e XXX\_E). Click “OK” and confirm that you have entered the correct ID # and letter.

**Step 11.** This time for “**Which Version**”, you will need to **select “Version E”**, then **Say:**

***“Please make sure that you read everything carefully and let me know if you have any questions before you click to begin the task. Again, call out when you are finished, I can hear you from the other room.”***

**Step 12.** After task is finished, re-enter the **Testing Room**.

**Step 13.** Click the **Red X** in the corner to close the program.

***“Thanks for your work on those two attention tasks, I know that they can be challenging. Now we are going to take a quick break and I’d like for you to watch this video. Please call out when the video has finished.”***

**Step 14.** Click on “**Funny Cats Deus” video** located in the Attention folder and leave the testing room.

**Step 15**. Come back in about 3, and turn off the monitor.

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**RSPAN task data saving**

**Step 3.** The data files from the RSPAN tasks will be generated in the same location as the task file. For example, if you keep the task file in a folder named “Attention” on your desktop, the data files will be generated into the “Attention” folder on the desktop. For each RSPAN task that you administer, the data will be generated as one text file. If you run both the emotion and the neutral RSPANs, you will have one text file labeled “**Emotion RSPAN data ID#\_E**” and one text file labeled “**Emotion RSPAN data ID#\_N**”. These data files can be saved in any location you choose.

**RSPAN task scoring**

**Step 4.** Create a scoring sheet for your dataset (see RSPAN Scoring Sheet provided above, this sheet includes one row of sample data as an example). The numbers that you will generate from the count sheet (see below, step 5) will be entered into this sheet. You will be able to enter the data for all participants in this scoring sheet, providing you with a complete dataset for your sample.

**Step 5.** Download and open the RSPAN Count Sheet (use above link).

* 1. This file has two areas to enter data, EMOTIONAL and NEUTRAL
		1. These correspond to the aforementioned files (E for EMOTIONAL, N for NEUTRAL)
	2. Now open a set of RSPAN data files for one participant (e.g. 8001\_N, 8001\_E)
		1. Select the first portion of the data (e.g. below 8001\_E,emotion, stopping before START RECALL)
		2. Paste this data into the appropriate column on the Count Sheet (adjacent to either N,N column for EMOTIONAL or NEUTRAL)
		3. Doing so should cause a number to appear in the Total column of either E or N
		4. Repeat this step for the second file
1. Once you have done so, enter this data into the appropriate scoring file mentioned in step 4 in the matching column to the right side (E\_Correct or N\_Correct)
	1. Doing so should generate a value in the adjacent column indicating percent
2. Repeat these steps for each file until completed, ensuring you have cleared each column before entering new data

**Step 6.** Download and open the RSPAN Key (above)

**Step 7.** This particular RSPAN has 15 trials that include set sizes of 3-7 words. Each set is scored independently and then an average is taken of all scores to determine a person’s Working Memory Capacity. Below you will find the scoring procedure along with examples of issues that may arise. Complete the below scoring procedure by using the RSPAN key.

* The RSPAN is scored using the partial-credit scoring method. This involves calculating the proportion of correct words out of the number of items in each trial.

Consider the following:

\_\_Tree\_\_ \_\_Arm\_\_ \_Heart\_ \_\_Snow\_\_ \_\_Pear\_\_ \_\_Pen\_\_ \_\_Cord\_\_

-If the participant typed: \_\_Tree\_\_ \_\_Arm\_\_ \_Heart\_ then they would be scored as having 3 correct answers out of 7, and their score for that trial would be .43

* This score would be the same even if they left out words as long as they are still in order.

-If they typed: \_\_Arm\_\_ \_\_Snow\_\_ \_\_Cord\_\_ then they would still have 3 correct answers out of 7, and their score would still be .43

* To be counted as correct, the items need to be in serial order.

 -If the trial consists of the words

\_\_Blue\_\_ \_\_Tin\_\_ \_\_Seed\_\_ and they write \_\_Tin\_\_ \_\_Seed\_\_ \_\_Blue\_\_

you would only count words in the correct place, i.e: \_\_Tin\_\_ \_\_Seed\_\_, which would give them a score of .67

* When spelling is in question, score the word as correct only if it does not make another word.

 -For example, if the correct word is \_\_Seed\_\_ and they type \_\_Sead\_\_ you

 would count it as correct because it does not make a new word.

 -However, if the correct word is \_\_Blue\_\_ and they type \_\_Blew\_\_ it would be incorrect

 because these words do not have the same meaning.

* If they pluralize a word, it should be scored as correct.

-If the correct word is \_\_Shoe\_\_ and they type \_\_Shoes\_\_ it would be scored as correct.

Here is the scoring key proportion chart:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Set Size 3 | Set Size 4 | Set Size 5 | Set Size 6 | Set Size 7 |
| 1/3 = .33 | 1/4 = .25 | 1/5 = .2 | 1/6 = .17 | 1/7 = .14 |
| 2/3 = .67 | 2/4 = .5 | 2/5 = .4 | 2/6 = .33 | 2/7 = .29 |
| 3/3 = 1 | 3/4 = .75 | 3/5 = .6 | 3/6 = .5 | 3/7 = .43 |
|  | 4/4 = 1 | 4/5 = .8 | 4/6 = .67 | 4/7 = .57 |
|  |  | 5/5 = 1 | 5/6 = .83 | 5/ 7 = .71 |
|  |  |  | 6/6 = 1 | 6/7 = .86 |
|  |  |  |  | 7/7 = 1 |