

# Reducing interference improves the memorization of multiplication facts in case of hypersensitivity to interference

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## 1 The format of the raw data files

DL's training data is organized in 3 files – one contains the information about all the training sessions, and the two others contain the information from the testing sessions.

A 4<sup>th</sup> file includes the results from the first name – last name – country task.

### 1.1 *testing.csv*

This file includes DL's performance in the testing sessions before and after training. The file contains one line for each specific question that DL was asked.

#### Description of the columns in the *testing.csv* file

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Time	The testing time: before training, immediately after training, after 2 months, or after 3 years
Session	The testing session number (1-3): in each testing time, DL was tested in 3 sessions, administered in 3 different days
Operand1	The first operand
Operand2	The second operand
Result	The correct result
Response	DL's response. "+" indicates a correct response. (R) indicates that the experimenter repeated the question per DL's request. DL responded in Hebrew, but here we translated her verbal responses to English. However, when DL said only the first part of a word (when she was hesitating), we wrote her phonological utterance as it was pronounced. Below, Section 2 lists the Hebrew number words and explains the Hebrew verbal number system.
RT	Response time: the duration from the experimenter finishing to say the exercise until DL started responding.

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### 1.2 *test\_during\_training.csv*

This file includes DL's performance in the testing sessions that were administered during the training period (in the beginning of each week). The file contains one line for each specific question that DL was asked.

The columns are similar to the *testing.csv* file. The additional column "week" indicates the week number: "1" means the testing session administered in the beginning of the second week, and examined DL's knowledge of the first week of training. "4" means the session administered in the beginning of the fifth week, which examined DL's knowledge of all 4 weeks.

### 1.3 *training.csv*

This file includes DL's answers during the training sessions. Each session started with a pretest: the experimenter said each fact and DL said the answer. After responding for all 4 facts, her errors were corrected. Next, 3 memorization-and-recall phases were done. In each phase, the experiment said the 4 facts (exercise and result, e.g., "four times five, twenty"), presented in a fixed order, and DL repeated each fact immediately after it was said; then DL recalled the 4 facts in free recall.

#### **Description of the columns in the *training.csv* file**

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Session	Session's serial number (1-12)
Set	Set number (1-4)
Fact	The fact trained
Training order	The order in which facts were presented in the pretest and for training in this session
Pretest	DL's answers in the pretest
Free recall 1 / 2 / 3	DL's answers in the 1 <sup>st</sup> , 2 <sup>nd</sup> , and 3 <sup>rd</sup> training phases. We specified when DL forgot to recall one of the facts, or when she recalled the exercise but did not remember the result.
Post-test order	The order in which facts were presented in the post-test
Post-test	DL's answers in the post-test

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### 1.4 *name\_country.csv*

This file includes the results from the *first name – last name – country* task. The file contains the results of the 24 control subjects; of the additional, outlier control subject (subject ID = 100); and of DL.

For each subject, the file details their age, their digit span, and the number of correct results they obtained in the low- and high-similarity sets, in each of the 5 learning stages (score out of 6) and in the final test (score out of 12).

## 2 Verbal numbers in Hebrew up to 100

Syntactically, the verbal number system in Hebrew is similar to English numerals. There are number words for ones, teens, and tens. The tens word are derived from the ones word, in most cases with simple morphological modification.

The following table lists the phonological forms of single number words in Hebrew.

	<b>Ones</b>	<b>Teens</b>	<b>Tens</b>
0	Efes		
1	ekhad	Akhat esre	Eser
2	Shtayim	Shtemesre	Esrin
3	Shalosh	Shlosh esre	Shloshim
4	Arba	Arba esre	Arba'im
5	Khamesh	Khamesh esre	Khamishim
6	Shes	Shesh esre	Shishim
7	Sheva	Shva esre	Shiv'im
8	Shmone	Shmona esre	Shmonim
9	Tesha	Tsha esre	Tish'im

For most numbers, Hebrew distinguishes between masculine and feminine when denoting a number of objects. For arbitrary numbers, which do not count objects, Hebrew speakers usually use the feminine numbers, and these are the number words listed above.

When a number includes a tens word and a ones word (e.g., 32), they are merged with the word “and”. “And” is pronounced in Hebrew /ve/, and it is bound with the word following it. For example, the number 32 is pronounced /shloshim veshtayim/ (thirty and-two).