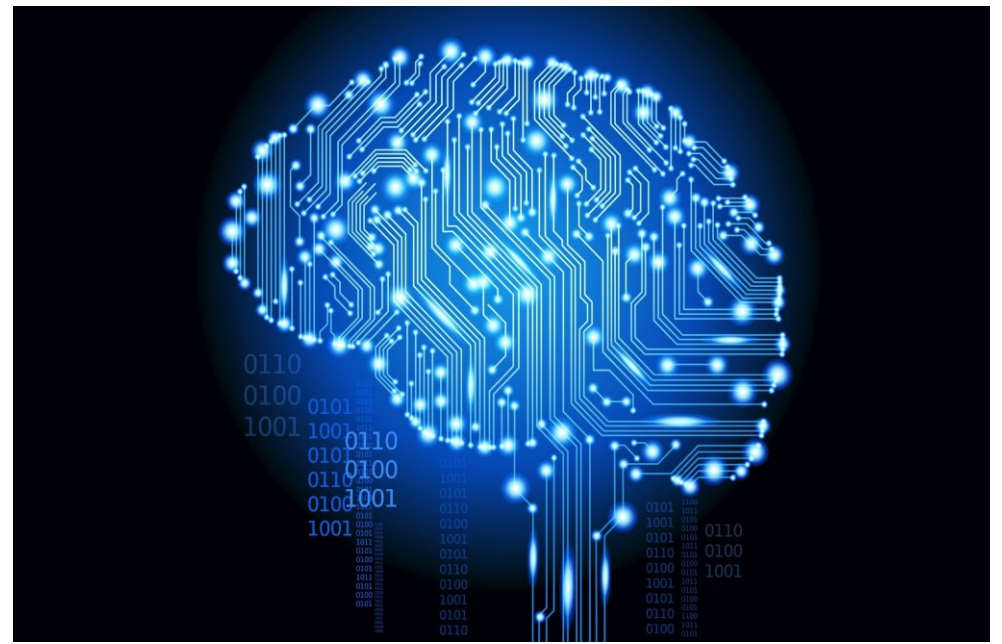




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# Recreational Drug Use and Memory

ADNAN LEVENT

BIRKBECK, UNIVERSITY OF LONDON

# Project Timeline

2016

2020



Drug and Alcohol Dependence

Available online 30 August 2019  
In Press, Journal Pre-proof



Illegal drug use and prospective memory: A systematic review

Adnan, Levent, Eddy, J. Davelaar

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<https://doi.org/10.1016/j.drugalcdep.2019.04.042>

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Acute and Chronic Effects of Recreational Drug Use on Memory

Recreational Drug Use and Memory: Longitudinal Study

Recreational Drug Use and Memory: Quantitative Study

Recreational Drug Use and Memory: Qualitative Study

# Acute and Chronic Effects of Recreational Drug Use on Memory

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- 3 phases in drug use
- Recreational drug: A **drug** used without medical justification for its psychoactive effects often in the belief that occasional **use** of such a substance is not habit-forming or addictive.
- "Using drugs is safe as long as you only do it every once in a while."
- Marijuana legalisation
- Participants;
  - 20 Non-Users,
  - 20 Recreational Drug Users (intoxicated)
  - 20 Recreational Drug Users (not intoxicated)
- The study consists of three parts: online survey, the assessment day 1 and day 2

# Part 1 (Online Survey)

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- Demographic Questionnaire
- Psychoactive Drug History Questionnaire
- Drug Abuse Screening Test
- General Health Questionnaire
- Pittsburgh Sleep Quality Assessment
- Paranoid Personality Disorder Test
- Barratt Impulsiveness Scale
- Raven's Advanced Progressive Matrices

# Part 2 (Assessment Day 1)

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- The Digit Span Task (verbal)
- The Verbal Fluency Test
- Royal Prince Alfred Prospective Memory Test: a short-term event- and time-based tasks
- Stroop test that is designed to assess the ability to inhibit cognitive interference

100 trials; colour names (green, red, yellow, blue) in different print colours appeared on the computer screen for 3 seconds one by one. Respond the colour of the ink that the word appears in on each trial, ignore the word that is displayed. 1 for green, 2 for red, 3 for yellow and 4 for blue.

# The California Verbal Learning Test

Assesses verbal learning and memory

**Immediate Free Recall**  
Read the Word List at an even pace, taking slightly longer than one second per word, so the entire list takes 12 to 14 seconds. Then say, Go ahead. Record all responses verbatim, in the order recalled.

**30-Second Distractor Task**  
Now I want you to count backwards from 100, like this: 99, 98, 97... and so on, until I say Stop. Ready? Begin. Allow 30 seconds, then proceed with Short Delay Free Recall.

**Short Delay Recall**  
Now tell me as many words as you can from the list I just read to you. Go ahead.

**Immediate Free Recall Instructions:**  
I'm going to read a list of words to you. Listen carefully, because when I'm through, I want you to tell me as many of the words as you can. You can say them in any order, just say as many of them as you can. Are you ready? Read the Word List, and then say, Go ahead.

**30-Second Distractor Task Instructions:**  
I'm going to read the same list again. Like before, tell me as many of the words as you can, in any order. Read the Word List, and then say, Go ahead.

**Short Delay Recall Instructions:**  
I'm going to read the same list one more time. Like before, tell me as many of the words as you can, in any order. Read the Word List, and then say, Go ahead.

Word List	Trial 1	Trial 2	Trial 3	Trial 4	Free Recall
hat	1	1	1	1	1
cherries	2	2	2	2	2
wrench	3	3	3	3	3
sweater	4	4	4	4	4
lemon	5	5	5	5	5
pliers	6	6	6	6	6
belt	7	7	7	7	7
peaches	8	8	8	8	8
drill	9	9	9	9	9
	10	10	10	10	10
	11	11	11	11	11
	12	12	12	12	12
	13	13	13	13	13
	14	14	14	14	14
	15	15	15	15	15
	16	16	16	16	16
	17	17	17	17	17
	18	18	18	18	18
	19	19	19	19	19
	20	20	20	20	20

Total Correct C  Total Repetitions R  Total Intrusions I

Total Correct C  Total Repetitions R  Total Intrusions I

Total Correct C  Total Repetitions R  Total Intrusions I

Total Correct C  Total Repetitions R  Total Intrusions I

Total Correct C  Total Repetitions R  Total Intrusions I

**10 min** The delay between the completion of the Short Delay Free Recall trial and the start of the Long Delay Free Recall trial should last approximately 10 minutes. Do not tell the examinee that there will be later trials. Stop Time : :

**Long Delay**  
Record all responses verbatim, in the order recalled. Prompt only once (e.g., Anything else?) at the end of each free and cued recall trial (i.e., after 15 seconds with no response or when the examinee says he or she cannot remember any more words).

**Free Recall**  
A few minutes ago, I read a list of words to you several times. Tell me all the words you can that were from that list. Go ahead.

**Cued Recall**  
Tell me all the words from the list that are fruits. Tell me all the words from the list that are clothing. Tell me all the words from the list that are tools.

Fruits	Clothing	Tools
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8

Total Correct C  Total Repetitions R  Total Intrusions I

**Yes/No Recognition**  
I'm going to read more words to you. After I read each one, say "Yes" if that word was from the list or say "No" if it was not from the list. If the examinee says "I don't know" or does not respond at all, provide a single prompt, such as Take your best guess or Tell me whether you think (repeat the word) was on the list.

Response	Item Type	Response	Item Type	Response	Item Type
newspaper	Y N UN	cherries	Y N T	elbow	Y N UN
wrench	Y N T	pants	Y N PR	socks	Y N PR
apple	Y N PR	vitamins	Y N UN	daisy	Y N UN
screwdriver	Y N PR	kite	Y N UN	pliers	Y N T
peaches	Y N T	hammer	Y N PR	orange	Y N PR
shirt	Y N PR	spoon	Y N UN	belt	Y N T
typewriter	Y N UN	banana	Y N PR	saw	Y N PR
coffee	Y N UN	drill	Y N T	lemon	Y N T
sweater	Y N T	hat	Y N T	gasoline	Y N UN

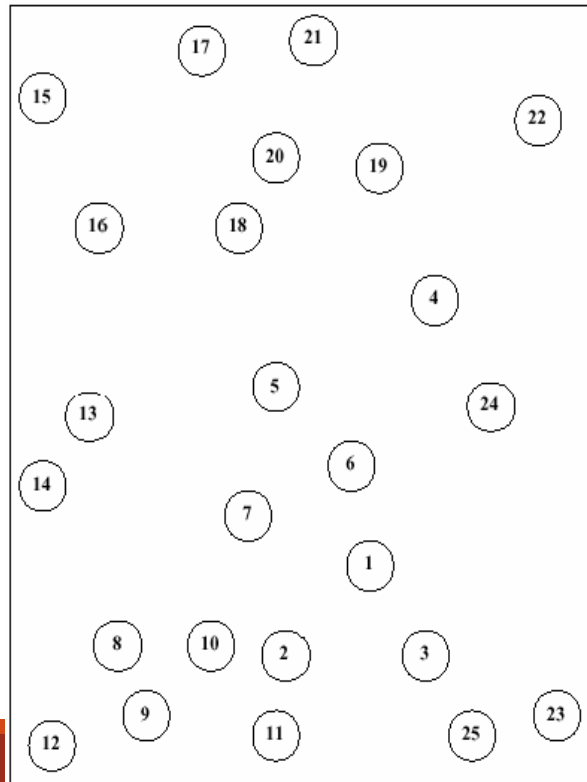
Total Hits  Total False Positives

**5 min** The delay interval between the end of the Long Delay Yes/No Recognition trial and the start of the Forced Choice Recognition trial should last approximately 5 minutes. Do not tell the examinee that there will be another trial. Stop Time : :

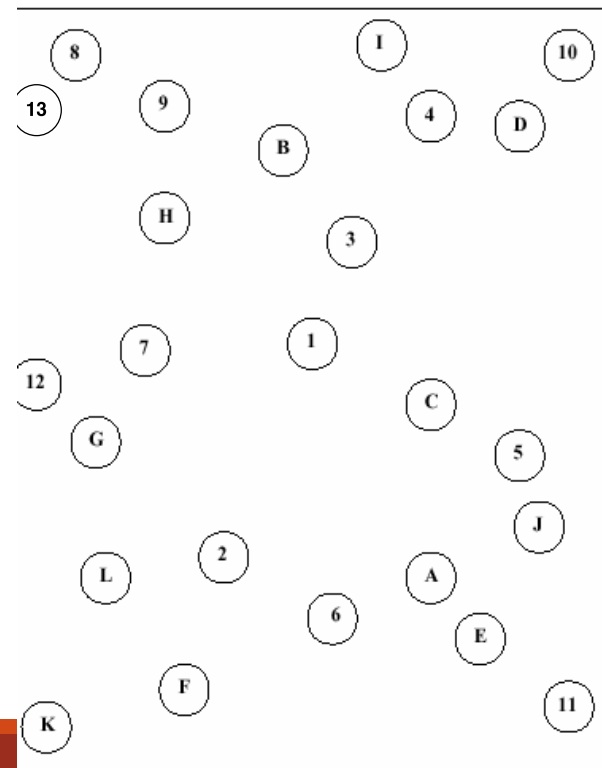
# The Trail Making Test

*Assesses attention and task switching abilities*

Trail Making Test Part A



Trail Making Test Part B



# The Autobiographical Memory Test

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- To assess the degree of specificity of autobiographical memory. Participants were asked to produce a specific memory in response to a presented cue word within a given time limit (30 sec)
- 10 words; 5 positive (e.g., smile) and 5 negative (e.g., argue)
- Scoring according to the criteria defined by Williams and Ditschel (1991) as specific or non-specific memories.
- Specific memories; events that occurred at a particular place and time within the course of 1 day
- No-specific memories included;
  - Extended memories; events that lasted for longer period of time
  - Categorical memories; events happened repeatedly over a period of time
  - Non-memories; semantic associated
  - Omissions; no response within the time limit



# The Tower of London Test

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- Assesses executive planning and problem solving abilities
- 28 problems with three-, four-, five-, and six-moves (4, 8, 8, and 8 problems each respectively)



# The Conceptual Span task

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- Assesses semantic short-term memory.
- Two versions:
  - Cluster format; 12 words with 4 consecutive words for each of 3 different semantic categories (e.g., France, Portugal, Greece, Holland, pear, apple, orange, strawberry, sheep, cat, rabbit, elephant).
  - Non-Clustered format: 9 randomly ordered words (e.g., bee, sister, second, mother, butterfly, month, ant, year, nephew ) that belonged to 3 different semantic categories (e.g., relatives, time, and insects).
- In both, immediately after the list was presented, subjects were asked to recall only the words from one cued category (e.g., fruit) in any order.

# Part 3 (Assessment day 2)

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- A different version of the same tests
- Psychoactive Drug History Questionnaire
- Pittsburgh Sleep Quality Assessment
- Urine drug test

Note: Most tests have a practice part on both assessment days in order to avoid learning effect.

# Expected results

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- Both recreational drug user groups perform worse than non-users on the first and second assessments.
- While recreational drug users (not intoxicated) and non-users perform similar on both assessments (no change), recreational drug users (intoxicated) perform worse on the second assessment compared to their first assessment.
- Recreational drug users (intoxicated) scored worse than recreational drug users(not intoxicated) and non users on the second assessment day.