THE MINISTRY OF HEALTH OF THE REPUBLIC OF UZBEKISTAN
TASHKENT MEDICAL ACADEMY
THE DEPARTMENT OF NEUROLOGY

ZARIFBOY IBODULLAEV

NEUROPSYCHOLOGICAL METHODS OF PATIENT EXAMINATION

MANUAL FOR MASTER STUDENTS

TASHKENT

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Vice rector for Academic Affairs
Teshaev O.R._____
«_____» _____2015y.

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MANUAL FOR MASTER STUDENTS

Tashkent - 2015

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2. Ashurov Z.Sh. –head of psychiatric and narcological department of the TMA, the candidate of medicine, dosent.

This manual is about neuropsychological methods of examination. And divided into 3 parts: the 1st chapter describes the scheme of neuropsychological examination, the 2nd chapter deals with neuropsychologicalalbum andthe 3rd chapter is about protocols of neuropsychological examination. It's meant for master students of Medical Psychology and Neurology Departments. Moreover, it can be exploited by research workers, who are intended to useneuropsychological methods in their research studies.

TABLE OF CONTENTS

CHAPTER I. THE SCHEME OF NEUROPSYCHOLOGICAL EXAMINATION

№	**Head record (passport information)**
1	Full name of the patient…….
2	Number of medical history……..…..
3	Age……..……...
4	Sex…….……
5	Nationality……..……..……..
6	Marital status ……..……...
7	Address ……..……
8	Education……
9	Occupation……..……..……
10	Left-hander, right-hander, ambidexter…….…….
11	Date of admission…….
12	Clinical diagnosis ……...……..…
13	Concomitant diseases ……
14	Date of examination…….……
15	Which clinic and departmentthe patient takes treatment in…….
	Subjective and objective information
1	Main complaints of the patient ……
2	Anamnesis vitae……..…….…….
3	Anamnesis morbi……...
4	Conscious……..
	Neuropsychologicalexaminations
1	Examination of Interhemispheric functional asymmetry……..
2	Examination of gnosis……
3	Examination of praxis……
4	Examination of speech function ……...
5	Examination of writing ……
6	Examination of counting ……..
7	Examination of memory……
8	Examination of intellect……...
	Results of neuropsychologicalexaminations
1	Left-hander, right-hander orambidexter ……...
2	Which types of agnosiaare detected? ……..
3	Which types of apraxiaare detected? ……...
4	Which types ofaphasiaare detected? ……
5	Agraphia:yes/no……
6	Acalculia: yes/no ……..
7	Memory impairment and itsdegree……
8	thinking disorder and itsdegree……...
	Conclusion
1	Neuropsychological syndrome……...
2	Niveau (topical) diagnosis……..
3	Clinical diagnosis…….

CHAPTER II. NEUROPSYCHOLOGICAL ALBUM

Examination of Interhemispheric functional asymmetry

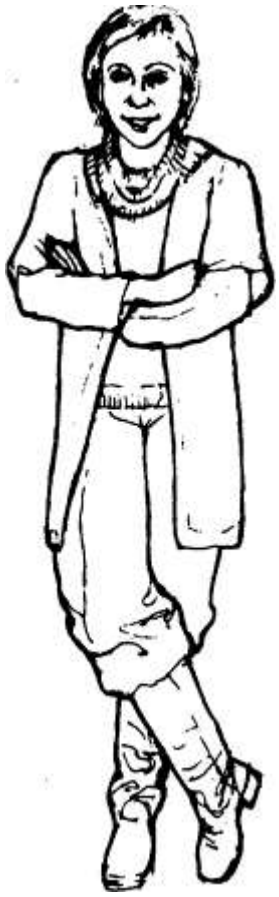


Figure -1. Who is she? Left-handed or right-handed?

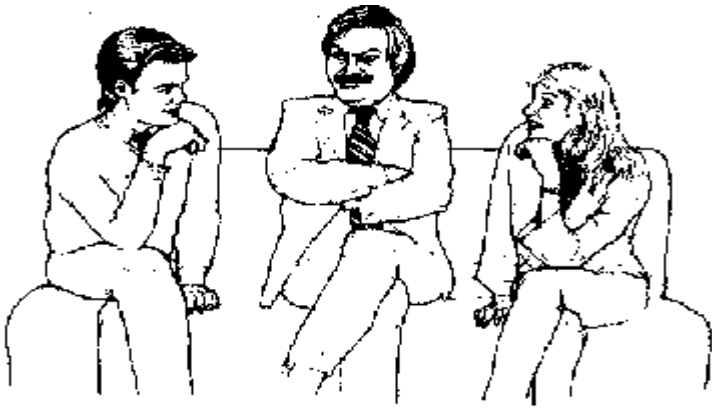


Figure -2. Who is left-handed, right-handed and ambidexter in this picture?

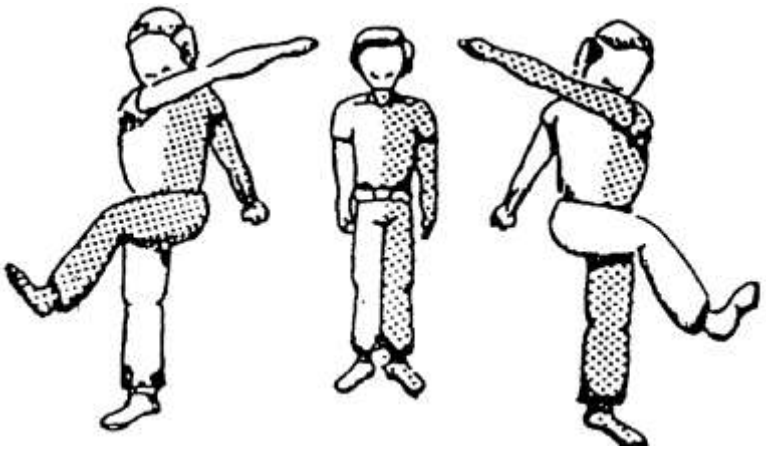


Figure -3. Who is left-handed and right-handed?

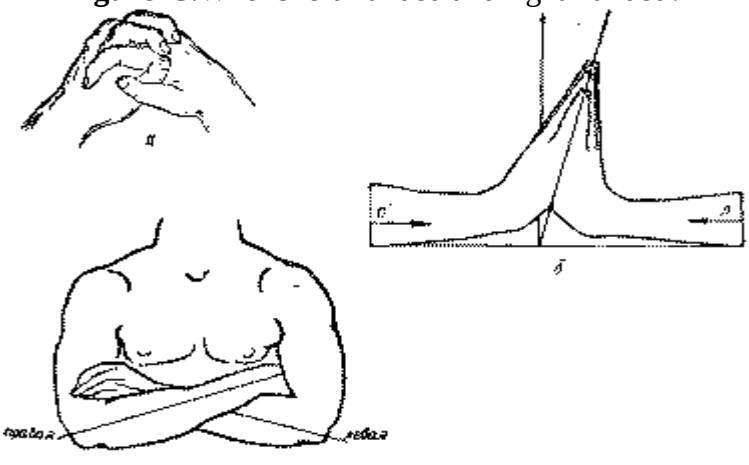


Figure-4. Functionalasymmetrytest. а– ifapersonputshisfingerstogetheraswellastomakeachain, right-handedperson willputhisright thumb over the left one, while left-handed person will do the opposite of it; б– ifapersonputshis palms together and push them toward each other, left hand of right-handers will be pushed by the right hand and while left-handed person will do the opposite of it;v — Napoleon's test:right-handedperson willputhisright forearm over the left one, while

left-handed person will do the opposite of it;.

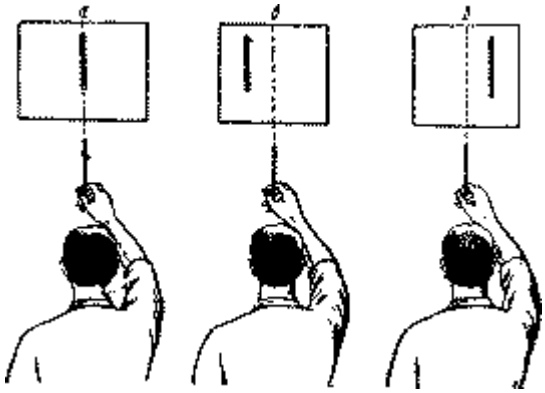


Figure-5. "Dominatingeye" test: a– Initially, both of the eyes will stay open andapenvisuallywillbeput in the middle ofimaginary surface; b – if a patient closes his left eye, the pen will "go left", while closing his right eye makes the pen stay fixed and motionless. And the left eye is considered as the dominating.в – if the patient closes his right eye, the pen will "go right", while closing his left eye makes the pen stay fixed and motionless. And the left eye is considered as the dominating eye in this situation.

Figure-6. If the right-hander claps his hands, his right hand will be above the left hand. While left-handed person will do the opposite of it; The right thumbnail and the nail of the right little finger are longer and broader than the left ones in right-handers.

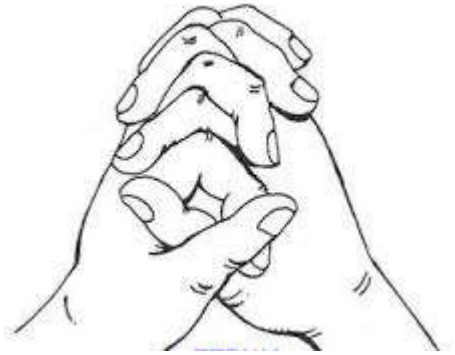


Figure-7. Ifaleft-handerputshisfingerstogetheraswellastomakeac

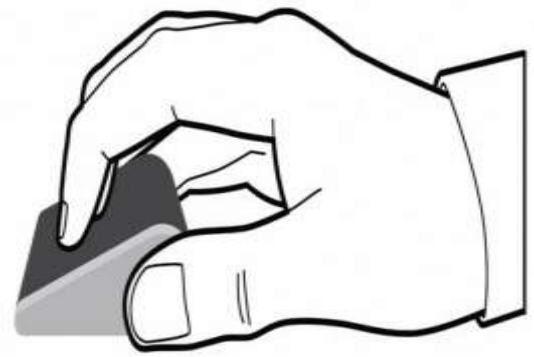


Figure-8.A right-hander holds the mouse in his right hand and a left-hander holds - in his left

hain, he willputhisleft thumb over the right hand..
one.

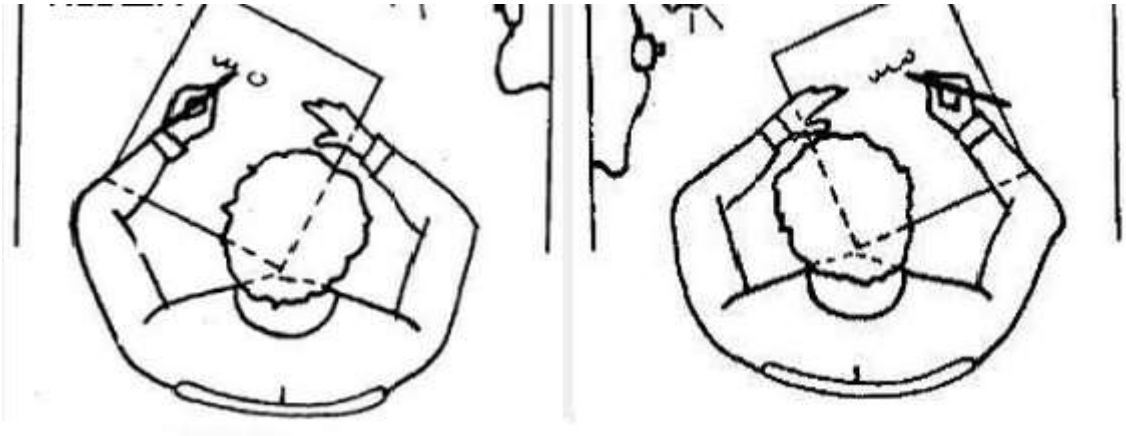


Figure-9. While writing and drawing,a right-hander holds the pencil in his right hand and a left-hander holds - in his left hand.

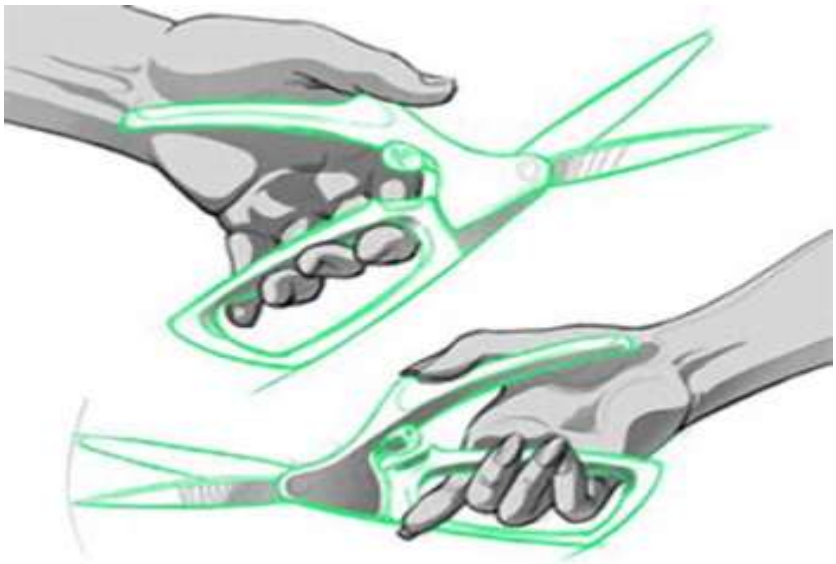


Figure-10.A right-hander holds scissors in his right hand, while A left-hander holds scissors in his left hand.

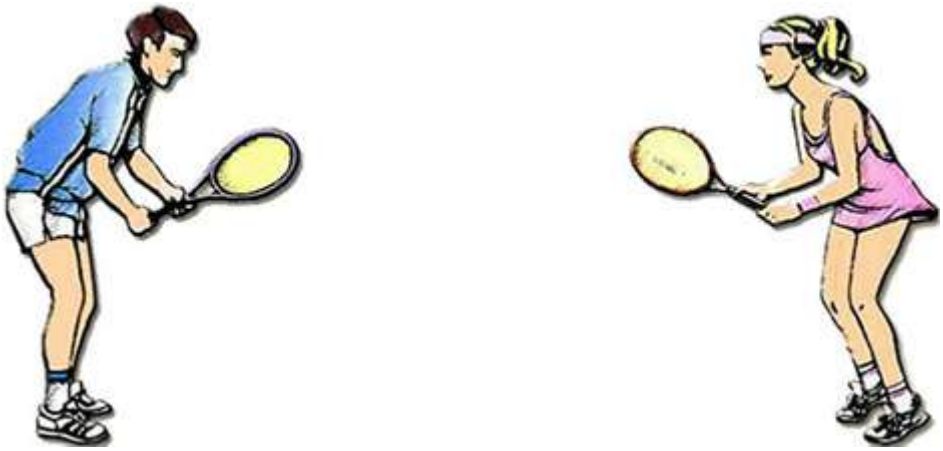


Figure-11.A right-hander holds the tennis racket in his right hand, the tennis ball - in his left

hand and strikes the ball.

Figure-12. While hammering a nail,a right-hander holds the hammer in his right hand and the nail - in his left hand.

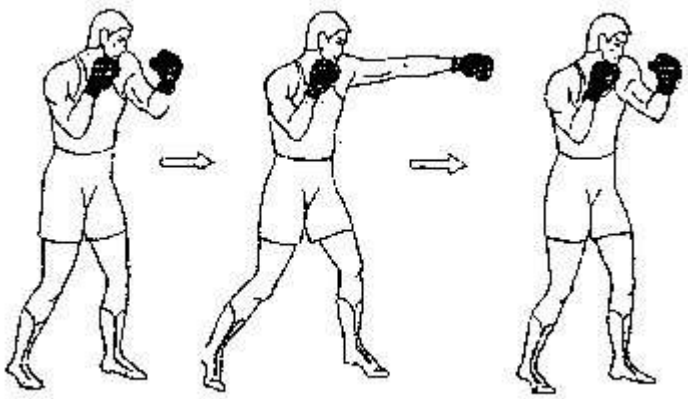


Figure-13. If a boxer is a left-hander, he will kick the main blow with his left hand.

Figure-14. If a soccer player is a left-hander, he will kick the ball with his left foot.

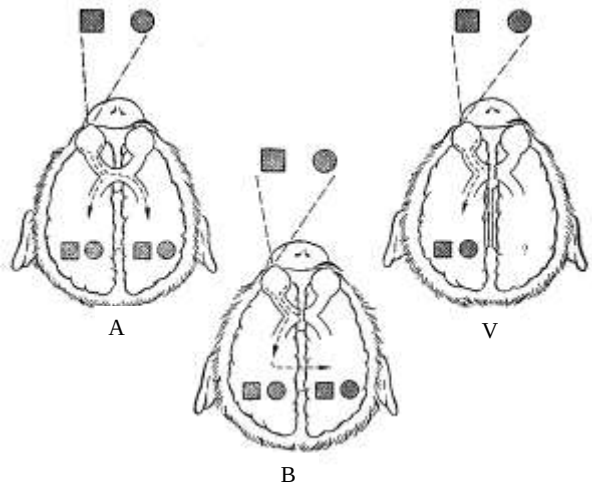


Figure-15. Sperry'sexperiment on cats for studying the machanisms of optical impulse conduction between hemispheres (1964).A – in spite of closed eye, impulses are conducted from one hemisphere to another through optic chiasm; B – If we close one eye and cut optic chiasm, impulses will be conducted through corpus callosium to the second hemisphere; V – If we close one eye and cut optic chiasm and corpus callosium, impulses won't be conducted to the second hemisphere.

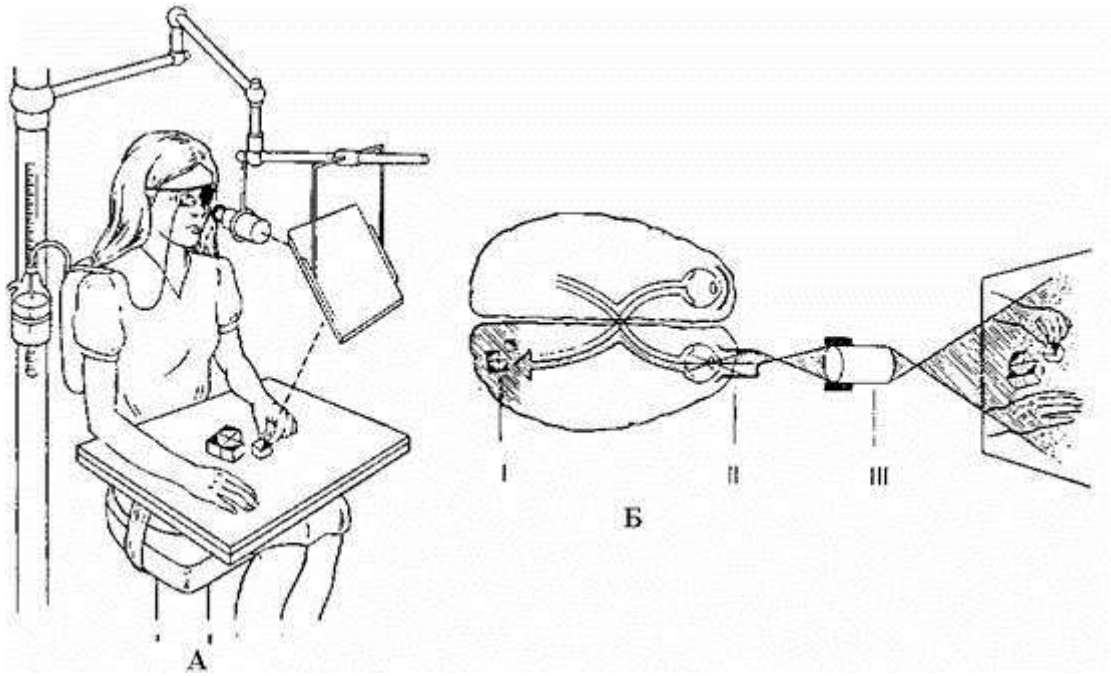


Figure-16.Devicefor testing the dominance of hemispheres.
А. A device, which ensures the enterance of information to only the one hemisphere.
Б. As a result of closed eye, image gets to the retina of only one eye.
I – image in the visual field is being reflected in only one hemisphere.
II –special lens, which ensures the enterance of imageto the retina of only one eye.
III – a telescope, which downsizes the visual field.

Vad test (1949, 1959). The dominance of left hemisphere is checked by injecting the 10% solution of amytal sodium to the left carotid artery.It brings into a state of left hemisphere's temporary lesion and appearance of the signs as aphasia and contralateral hemiparesis(at right-handers). If the right hemisphere is dominant, aphasia will appear after injecting the right carotid artery.

EXAMINATION OF GNOSIS

Figure-1b. Testing the agnosia for objects.

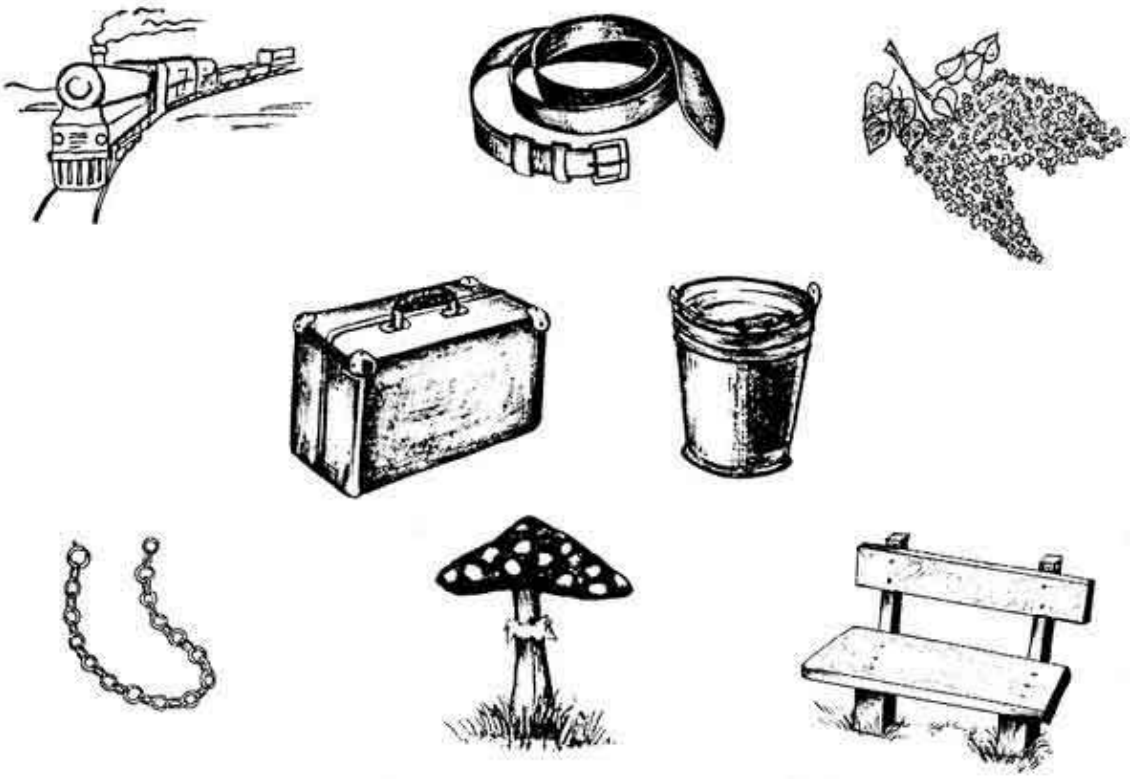


Figure-1b. Testing the agnosia for objects.

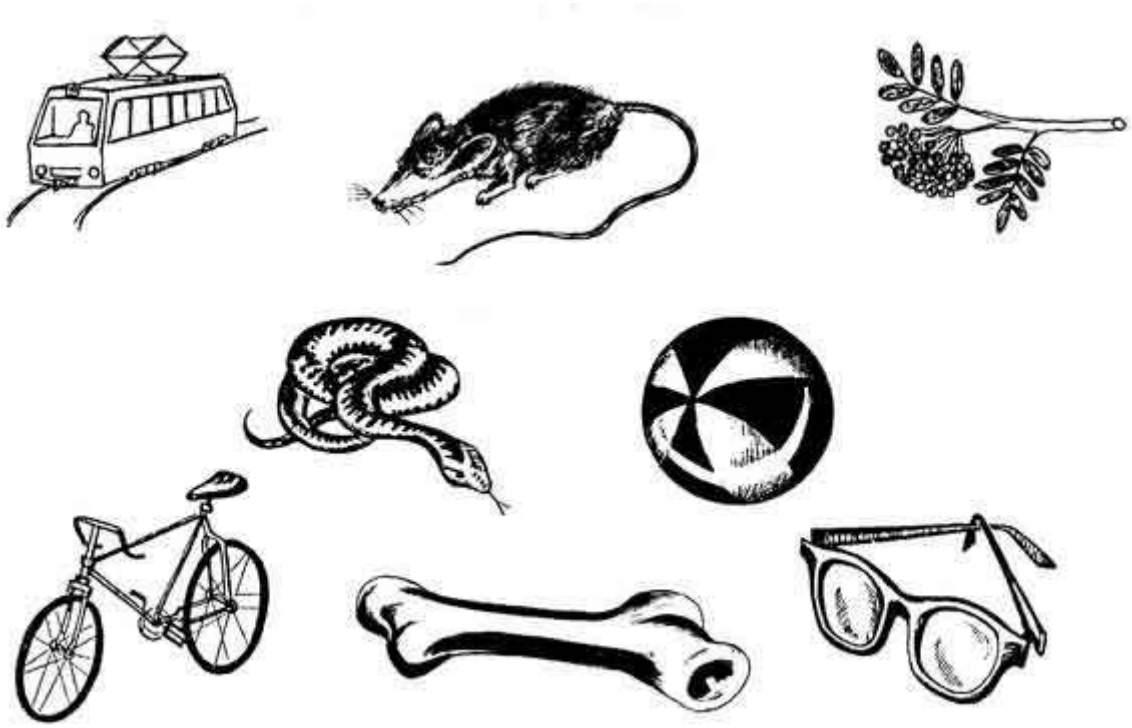


Figure-1c. Testing the agnosia for objects.

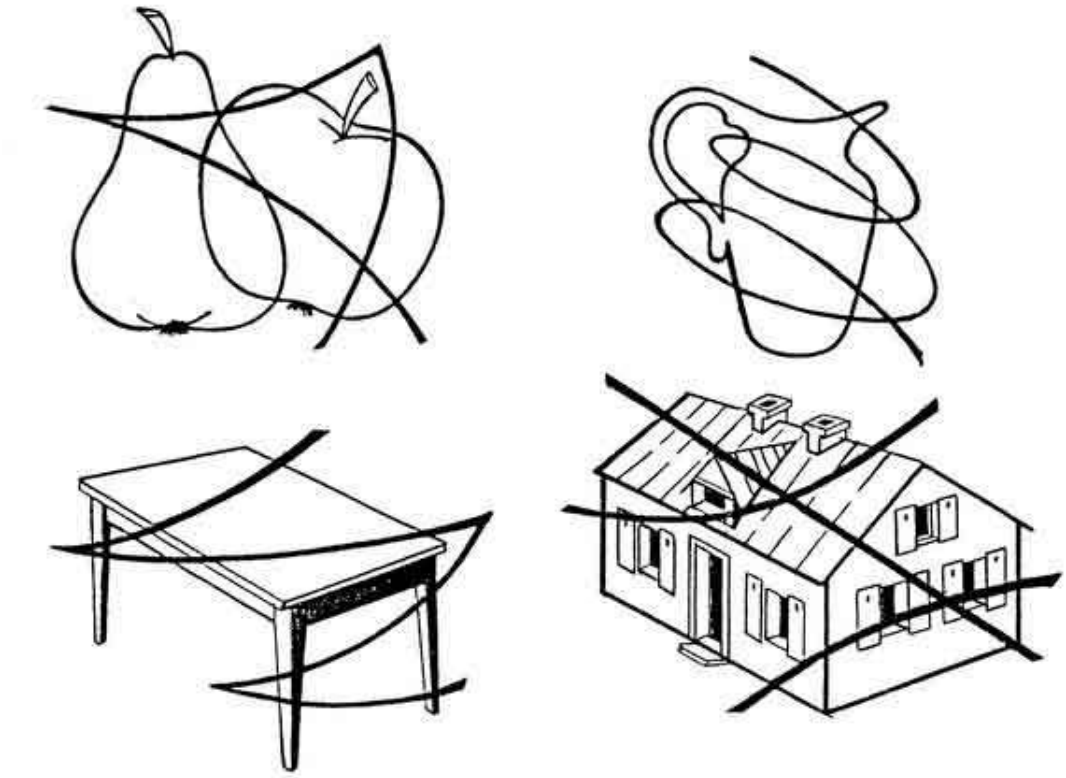


Figure-2a. Recognition of objects in striken through pictures.

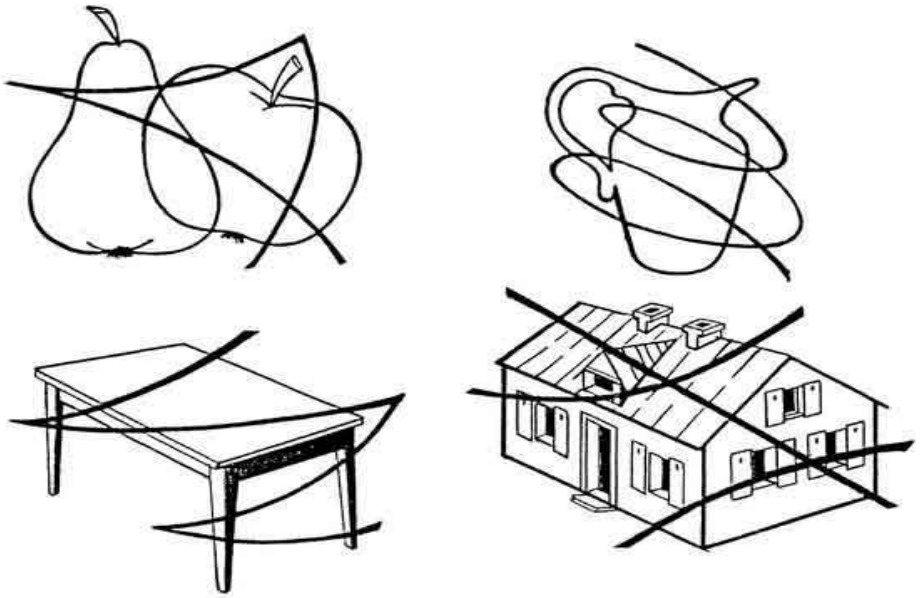


Figure-2b. Recognition of objects in striken through pictures.

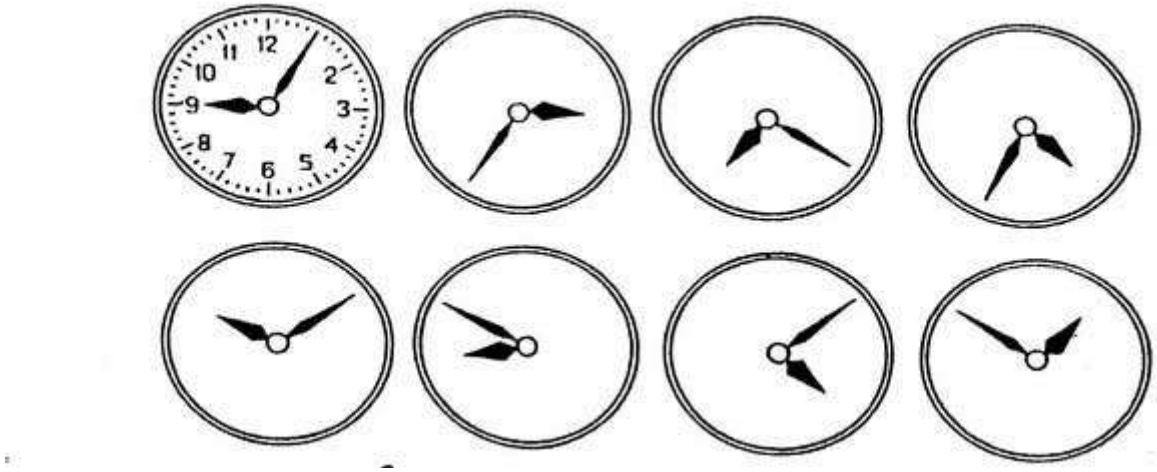


Figure-3. Visual-spatial gnosis. Tell the time on watches without clock dial (without numbers)

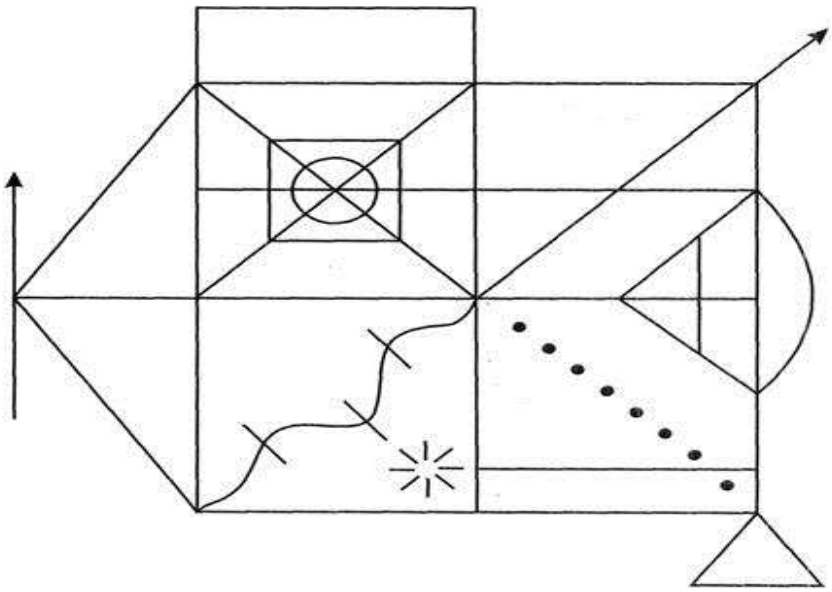


Figure-4. Spatialgnosis. Taylor's figure. Make the identical copy of this figure.

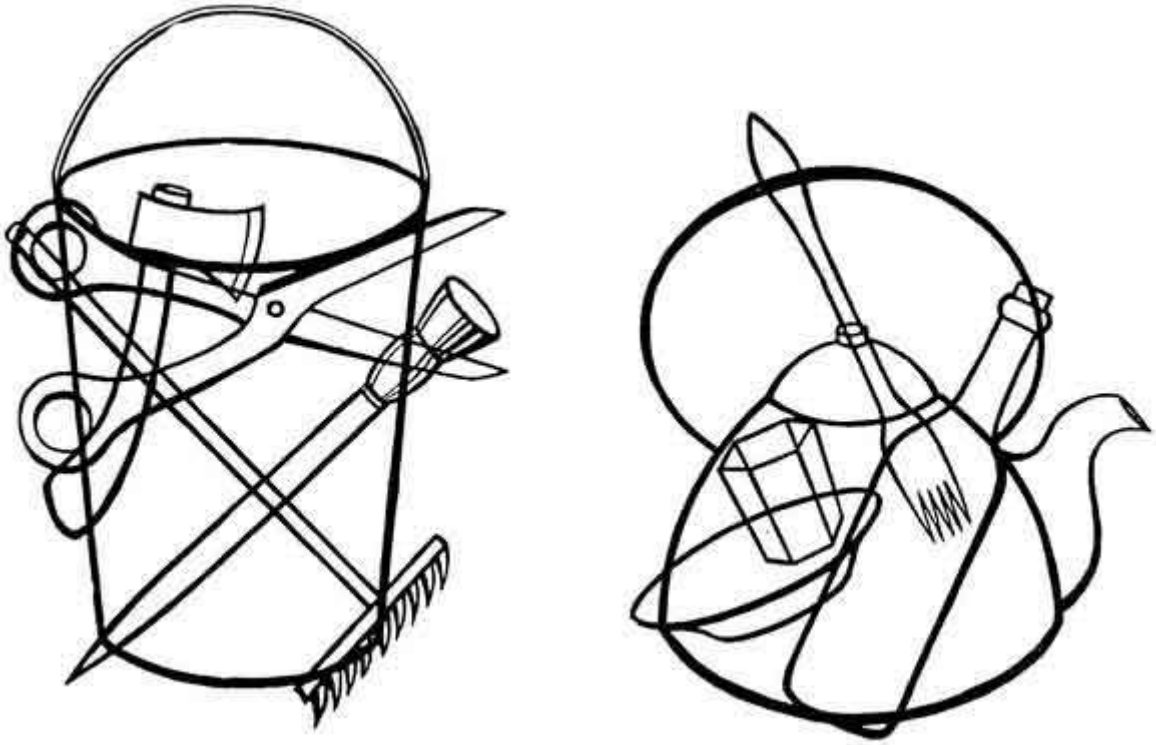


Figure-5. Poppelreyter test.

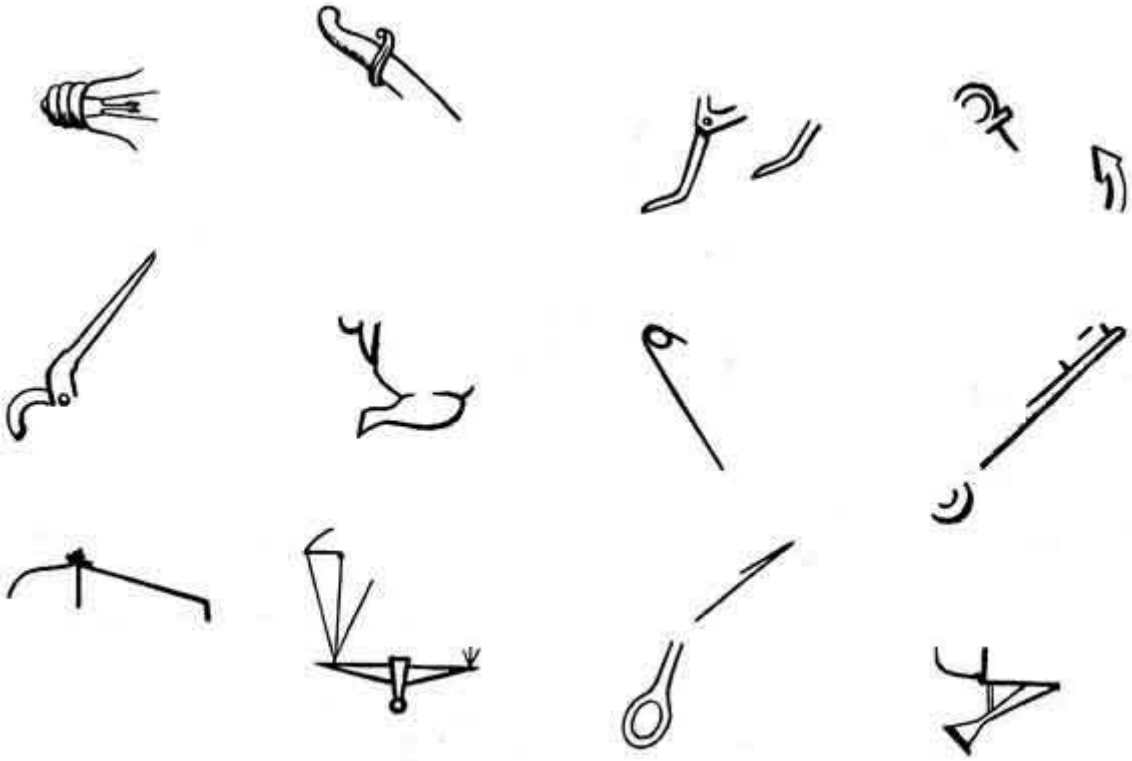


Figure-9. Try to guess the incomplete images.

Figure-7. Try to find the difference in this conflicting pictures.

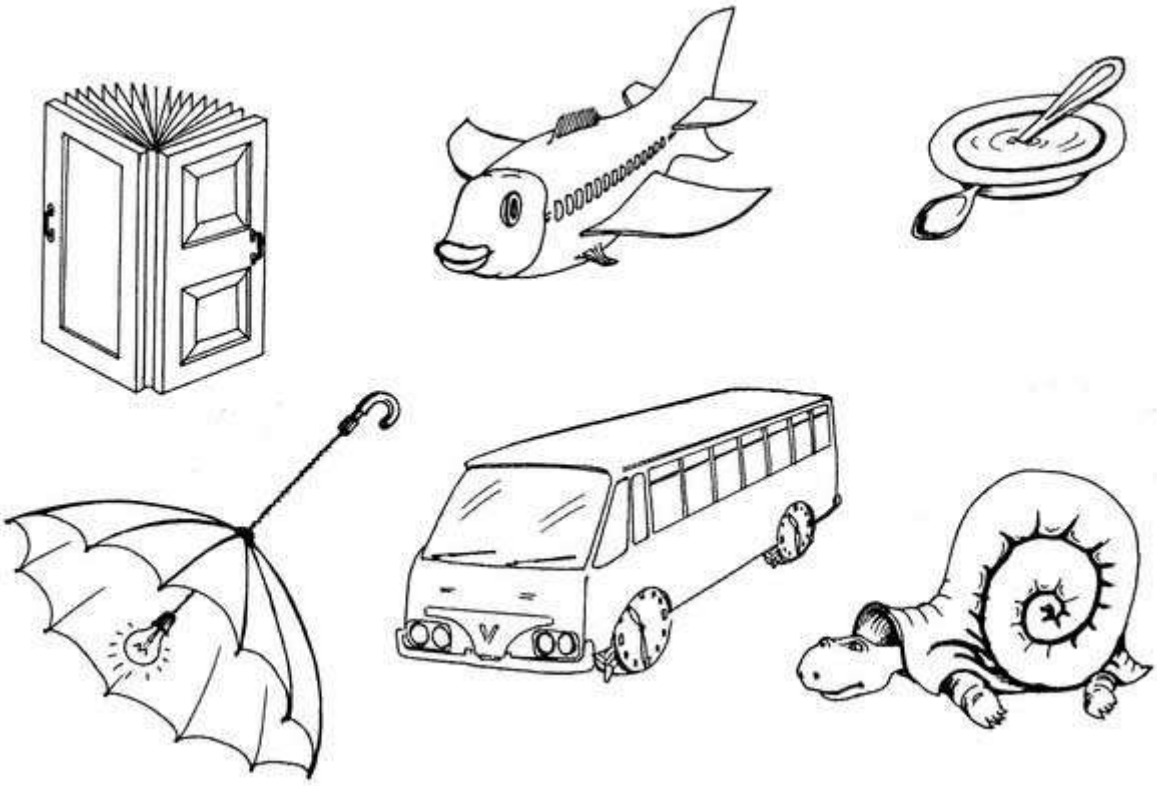


Figure-8. Try to find the difference in this conflicting pictures.

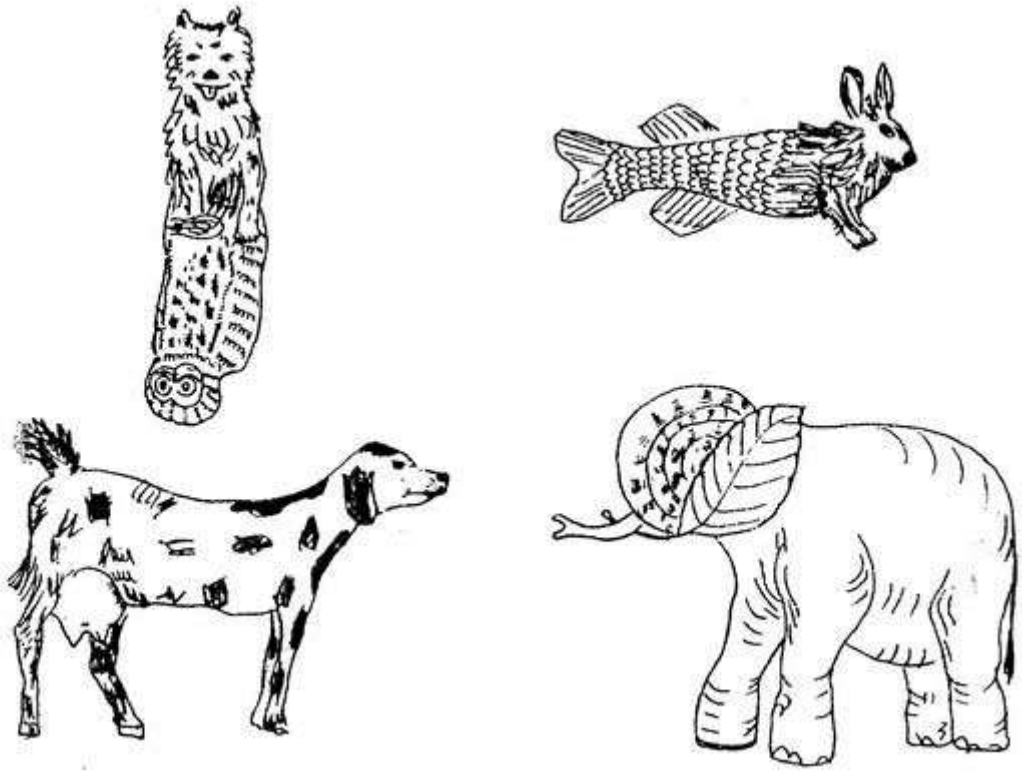


Figure-9. Try to find the difference in this conflicting pictures. We can test the Denial of the one side of space syndrome as well.

Figure-10. Portraits for testing the prosopagnosia.

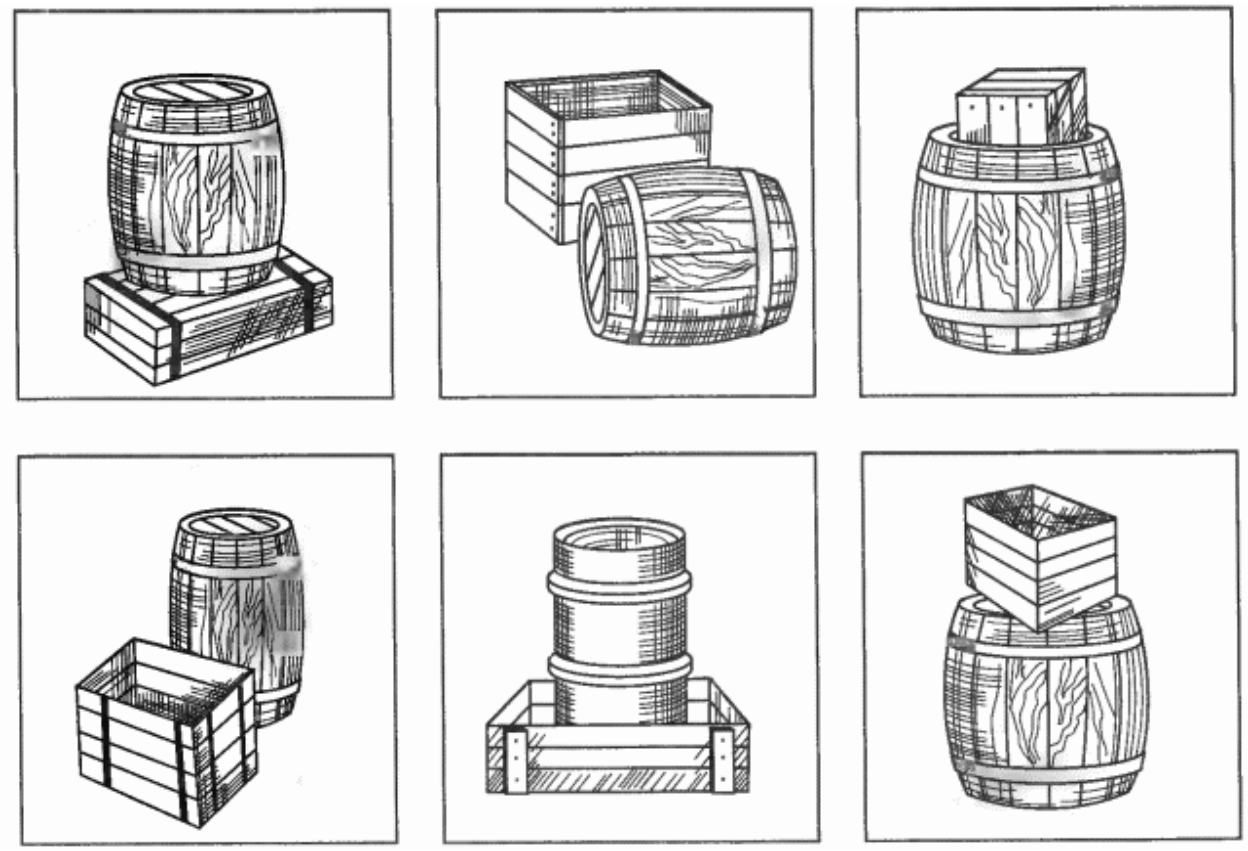


Figure-11. Visual-spatial gnosis. Tell the positional relationship between these objects.

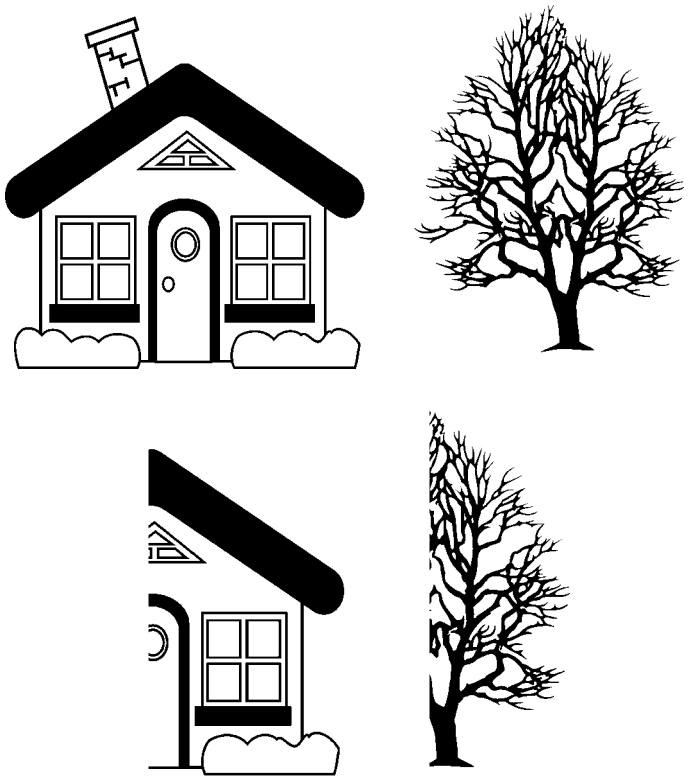


Figure-14.Denial of the one side of space syndrome. When patient was asked for making the copy of introduced images of a house and a tree, he didn't draw the left sides of objects.

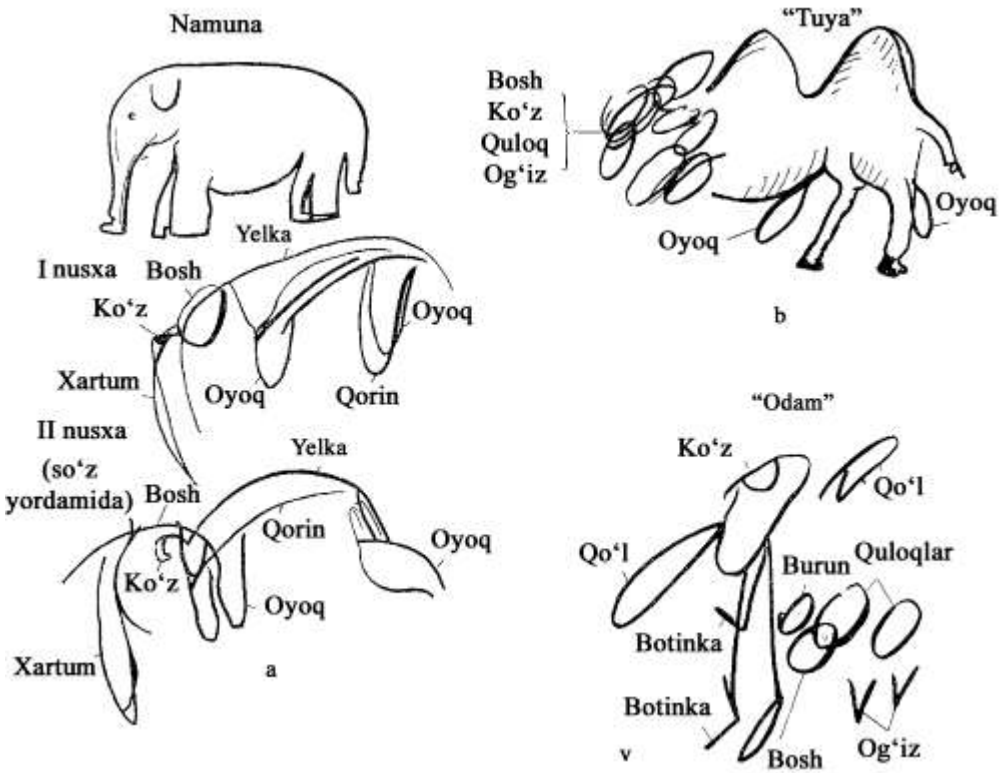


Figure-13. Confusing the spatial location of Objects (A.R. Luriya, 1973): a – copying the elephant's picture; b – making an attempt to draw camel's head; v – draw a man by heart.

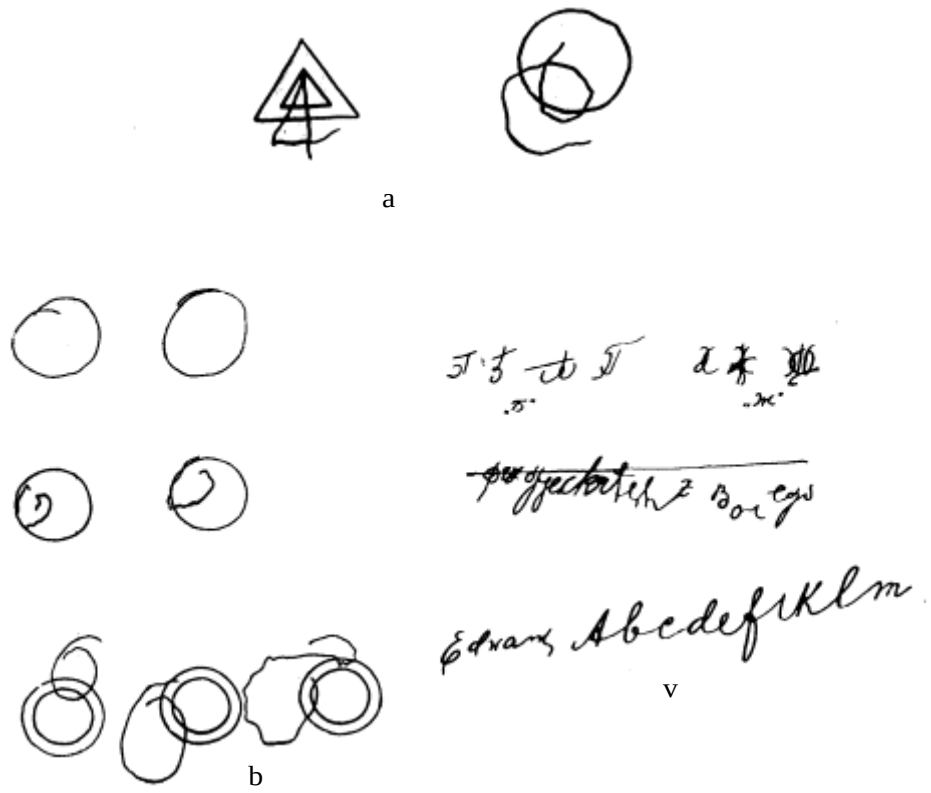


Figure-14. Simultaneous agnosia: both working with geometrical figures and alteration of handwriting (A.R. Luriya, 1973): a, b – the patient was asked for drawing identically on finished geometrical figures, and he wasn't able to perform it; v – he wasn't able to write words in the straight line.

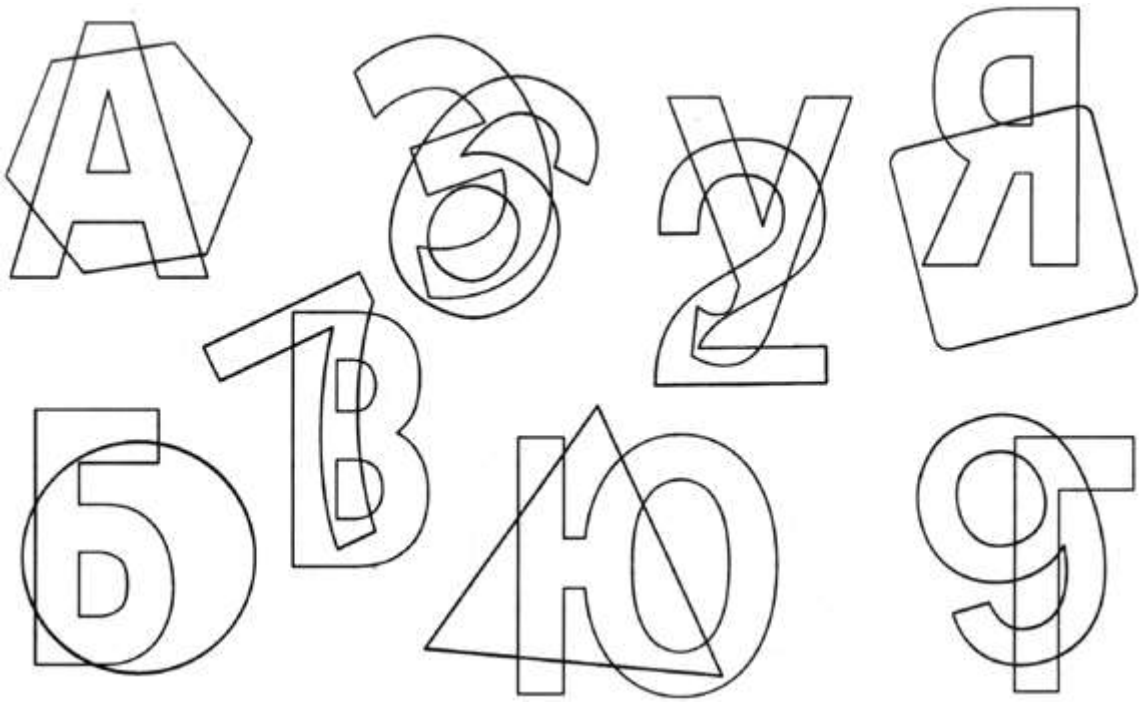


Figure-15. Literal, numerical and geometrical gnosis.

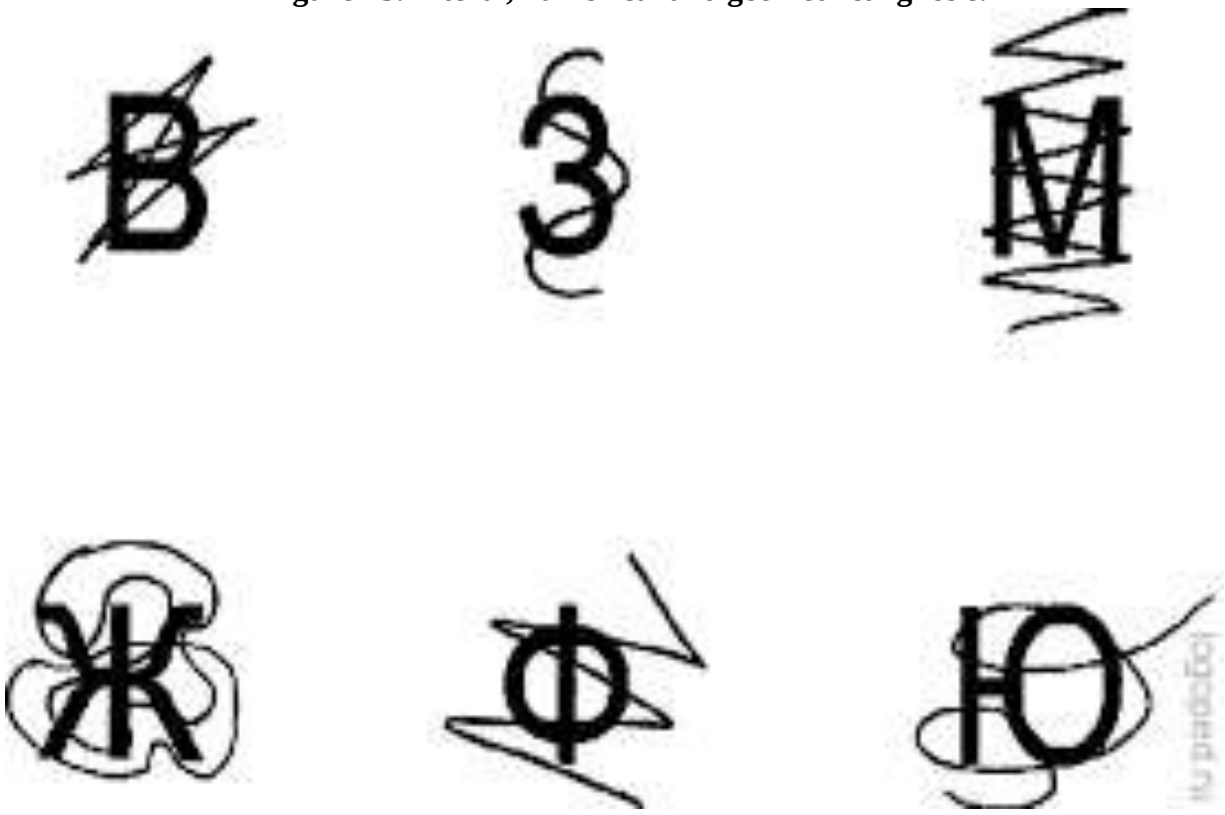


Figure-16. Literal and numerical gnosis.

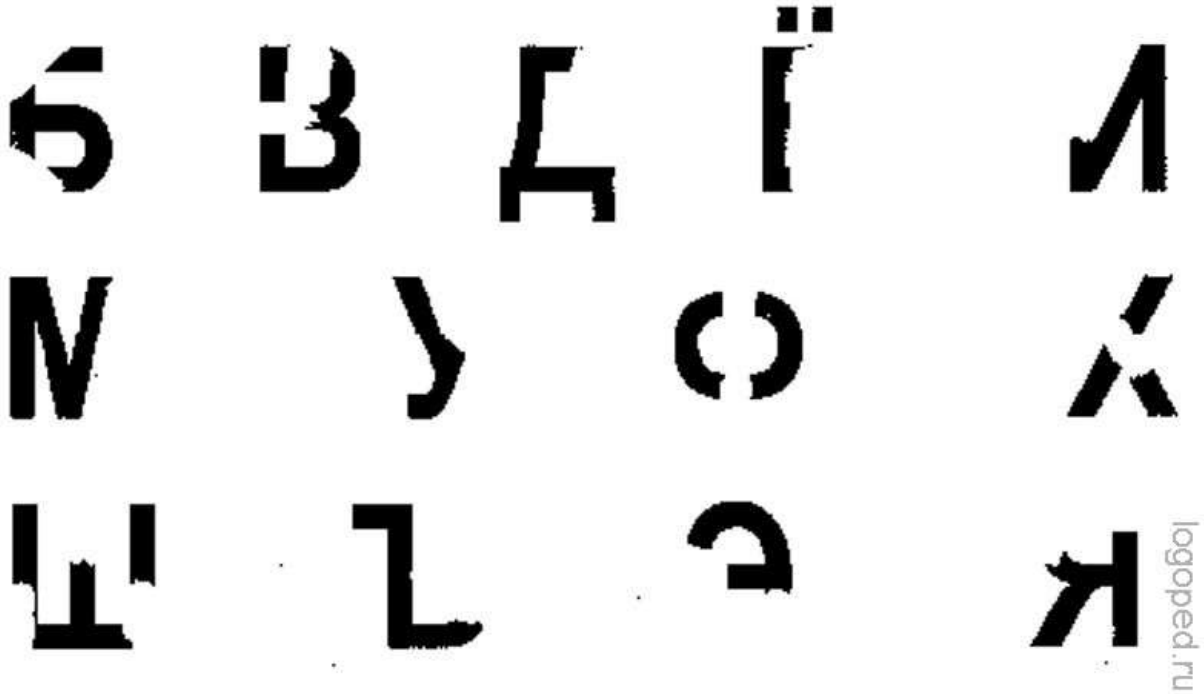


Figure-17. Literalgnosis.

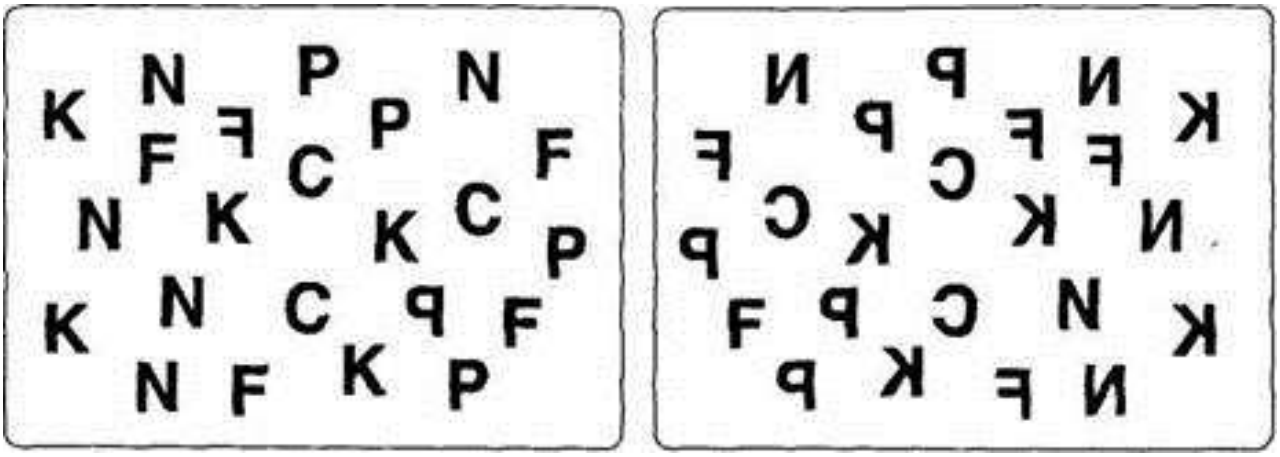


Figure-18. Literalgnosis. Recognition of reflected letters.

19	1	17	3
2	12	14	4
15	6	10	5
11	7	20	8
9	13	16	18

Figure-19. Numerical gnosis. Recognition of Arabic numerals

I	II	III	IV	V	VI
VII	VIII	IX	X	XI	XII

I	II	III	IV	V	VI
VII	VIII	IX	X	XI	XII

Figure-20. Numerical gnosis. Recognition ofRoman numerals

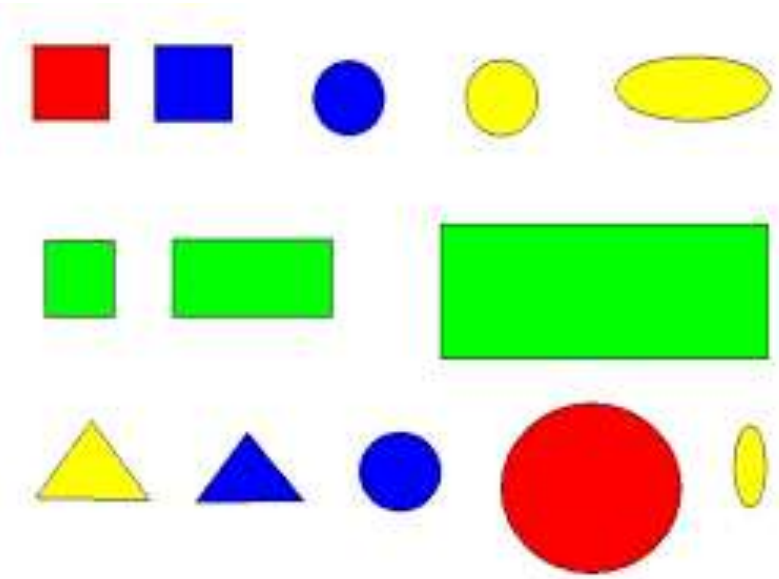


Figure-21.Colourgnosis. Recognition of colors.

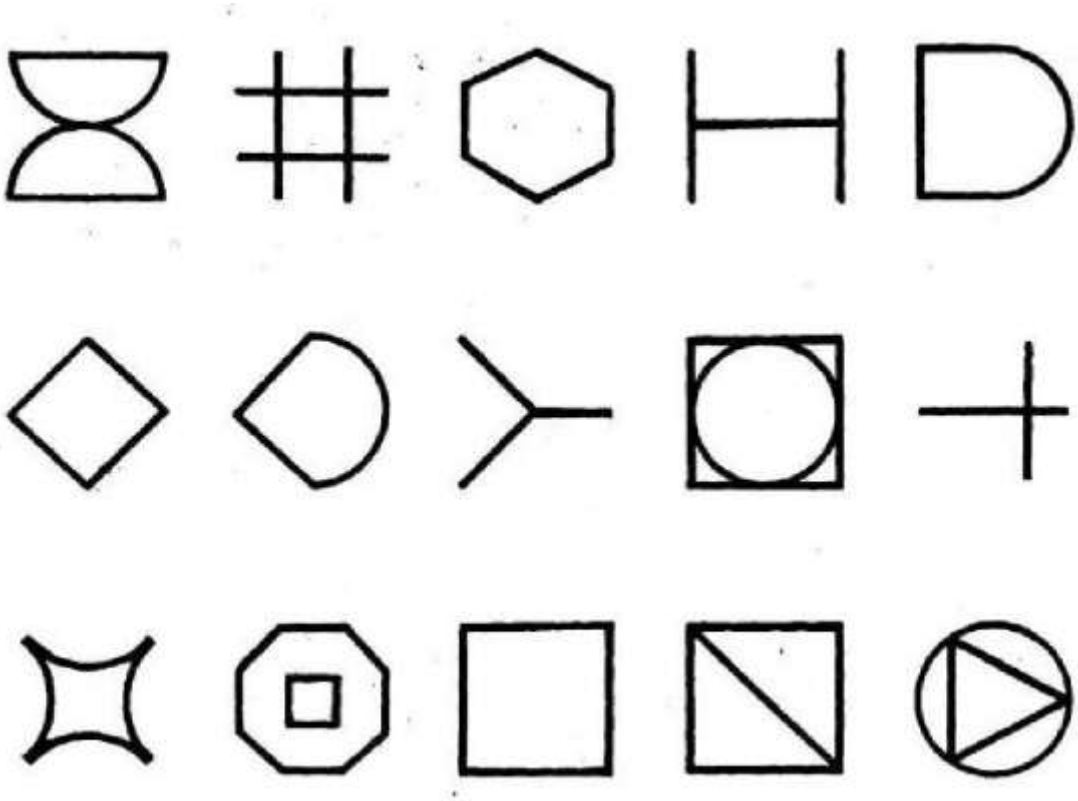


Figure-22. Gnosis of sophisticated figures. Recognition of geometrical figures

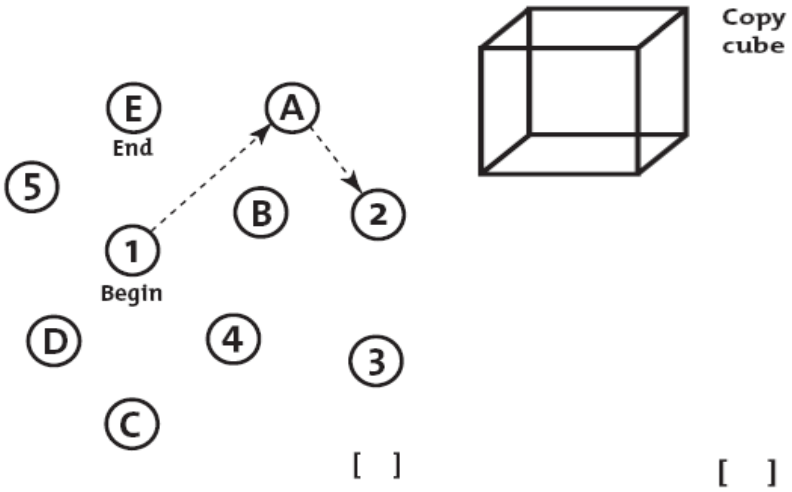


Figure-23. Visual-spatial gnosis. Testing of optico-spatial functionsperforming ability

Figure-24. Visual-spatial gnosis. Orientation on the geografical map. Where is located certain city or region?

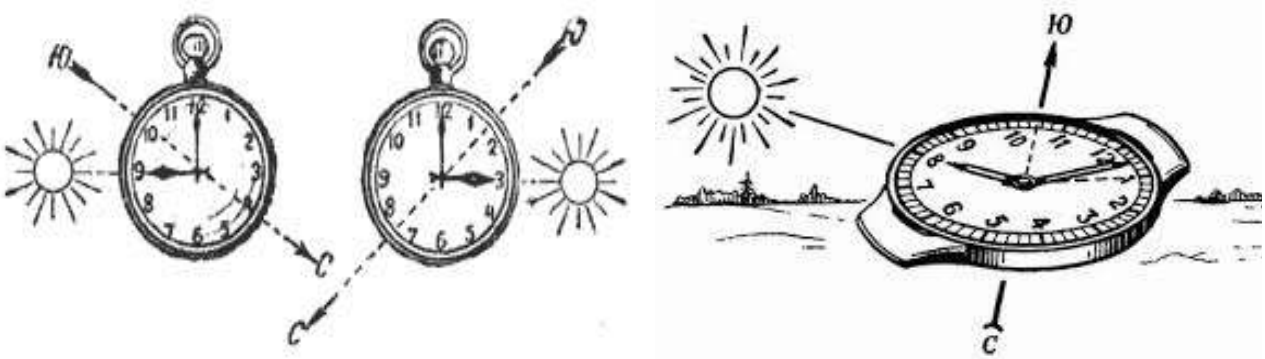


Figure-25. Visual-spatial gnosis. Show the location of The Qiblah.

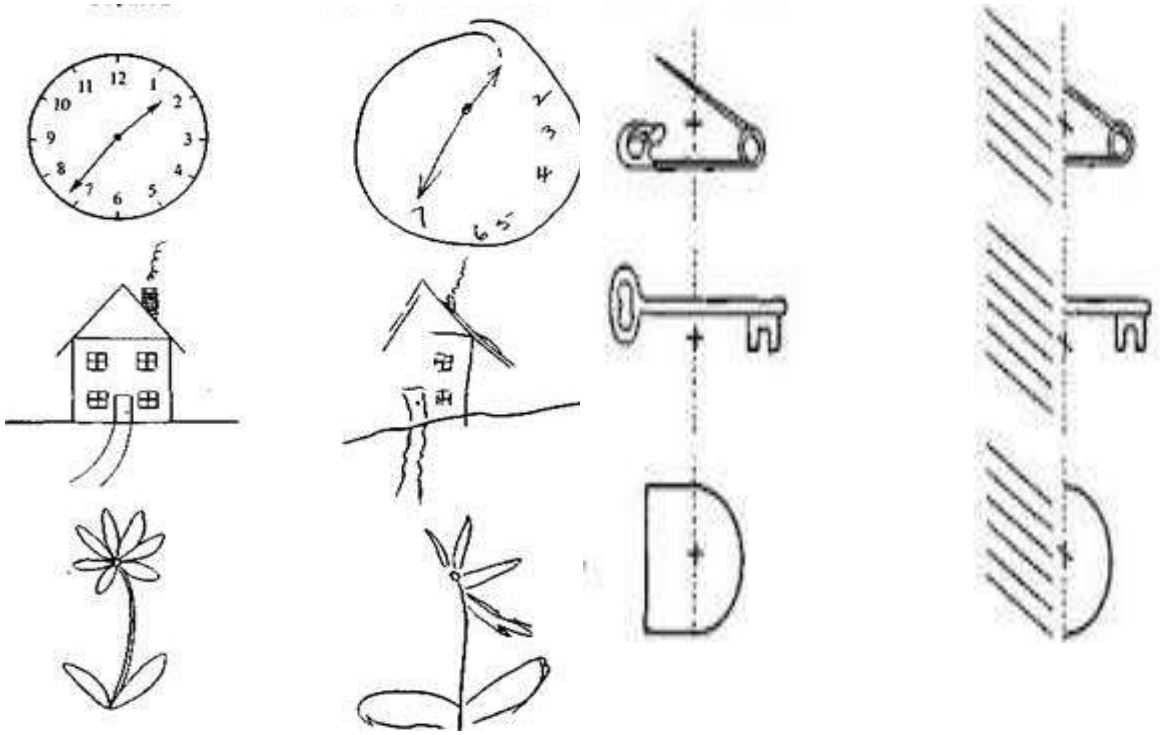


Figure-26. Denial of the one side of space syndrome

EXAMINATION OF SOMATOSENSORY GNOSIS

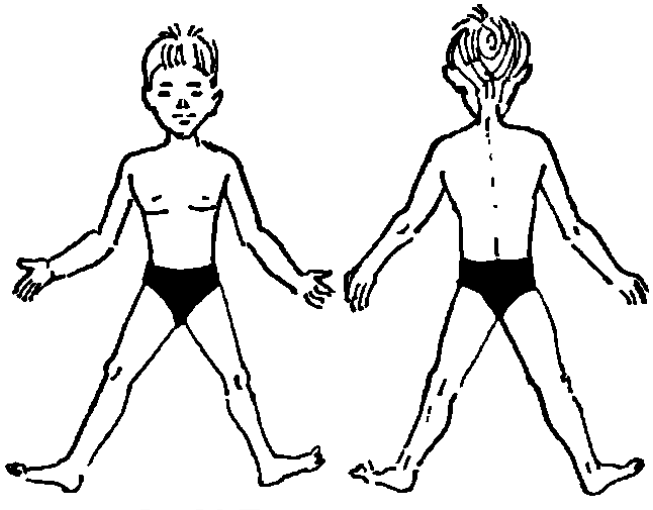


Figure-27. Localisation test. We check symmetrically patient's face, trunk, upper and lower limbs with sharp item.

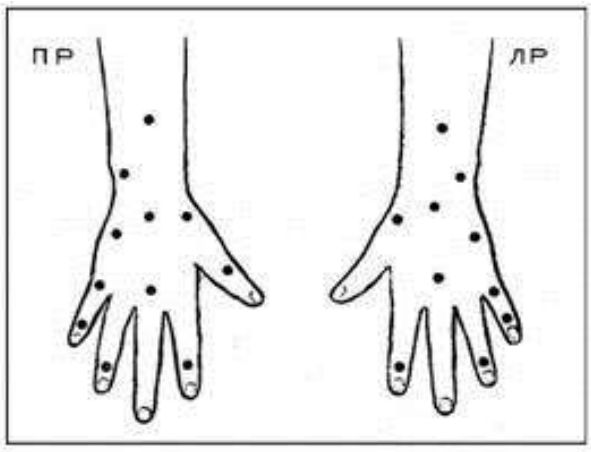


Figure-28. Localisation test. We check with eyes closed. Sharp side of reflex hammeris used for checking symmetrical sides of body.A patient should say about his feelings.

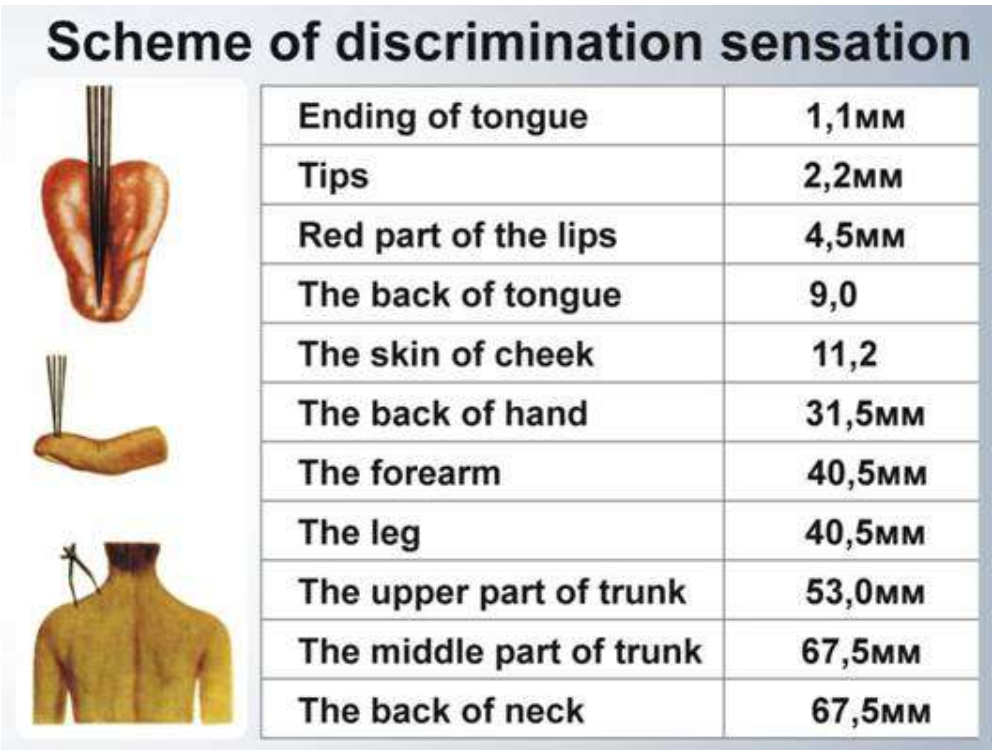


Figure-29. Sense of discriminatory touch. It is different in different parts of the body.There is a table to check the plausibility of results.

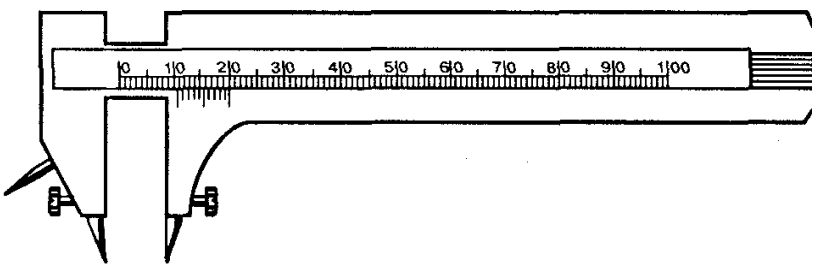


Figure-30. Weberian (vernier) caliper for checking the sense of discriminatory touch. Eyes are closed.Both arms of the caliper are set on different parts of the patient'sbody. The patient must feel both of arms as separate.

Figure-31. Dermal-kinesthetic sensitivity (Ferster'ssensitivity). Eyes are closed. An observer draws various figures, numbers and letters on different parts of the body.And patient tells us, what was it?

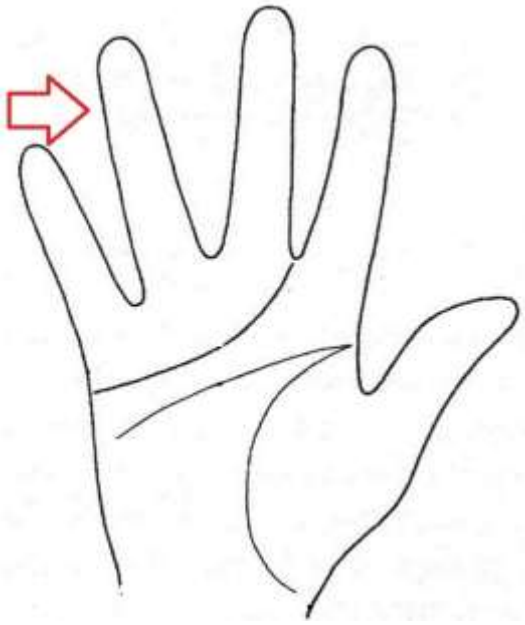


Figure-32. Telling the name of each finger. Patient tells us the name of each finger.

Figure-33.Examination of visual-spatial gnosis. Doctor sits face-to-face to the patient. During the conversation doctor examines the visual-spatial gnosiswith the help of questions as "Show me your left hand, right hand, my left hand and right hand".

Figure-33.Examination of stereognosis. Eyes are closed. We give items such as a key, a button and ect. in his hands. The patient touches it and names it.

EXAMINATION OF PRAXIS

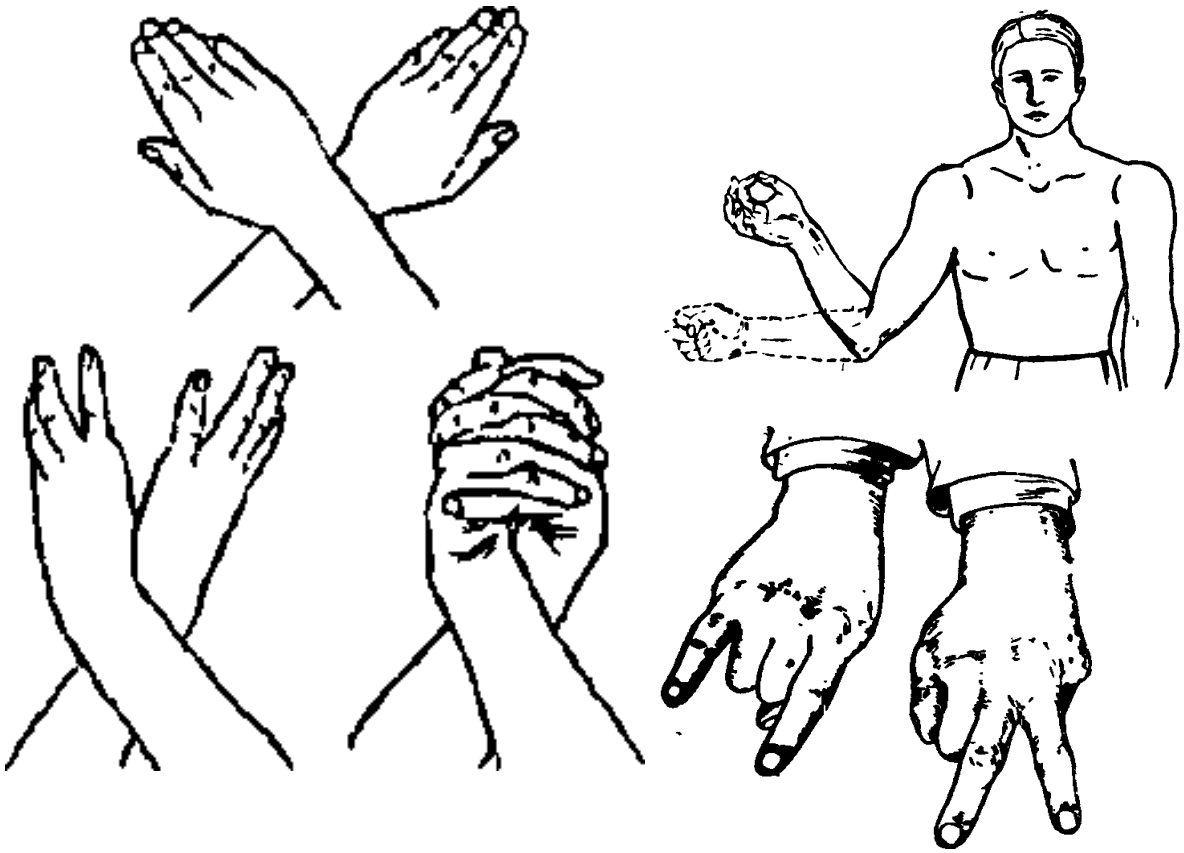


Figure-1. Simplemotion performance: with left hand,with right hand, with both of them

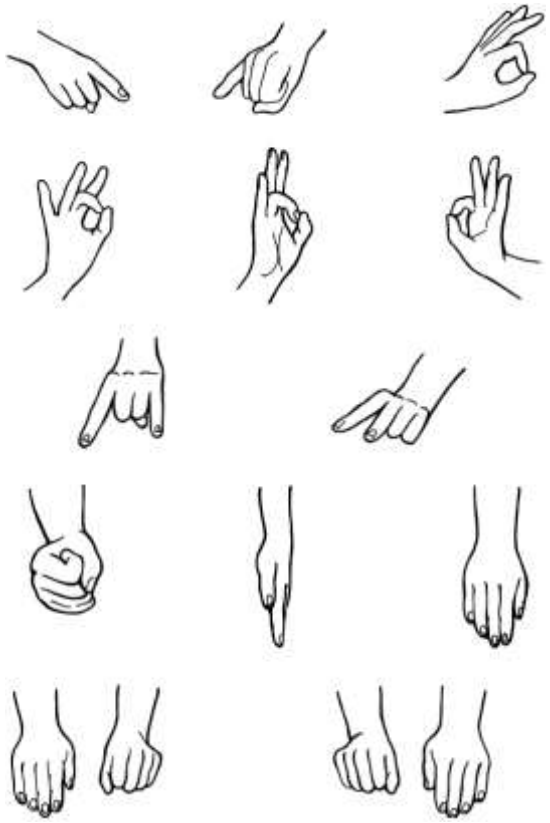


Figure-2. Praxis of (finger) position.
Firstly, a patient performs this test shown above with one of his hands.Doctor sits face-to-face to the patient and shows the patient how it should be done. The patient repeats it.After each position he bringshis hand into a free position.It will be repeated with the second hand. You should say:“Connect your thumbnail and index in order to form a ring, and straighten the other fingers (“OK” position)”. With help of verbal orders can be done all of positions. We can check optico-kinesthetic movements in this way.

Figure-3. Examination of visual-spatial construction (Head’s test). Doctor sits face-to-face to the patient andgives following instructions: “I’ll perform some movements with my right hand and you should do the same with your right hand. Then, I’ll perform some movements with my left hand and you should do the same with your left hand”.After each movement he bringshis hand into a free position. These movements should be repeated with verbal instructions: “Put your hand up”, “touch your right ear with left hand” and ect.

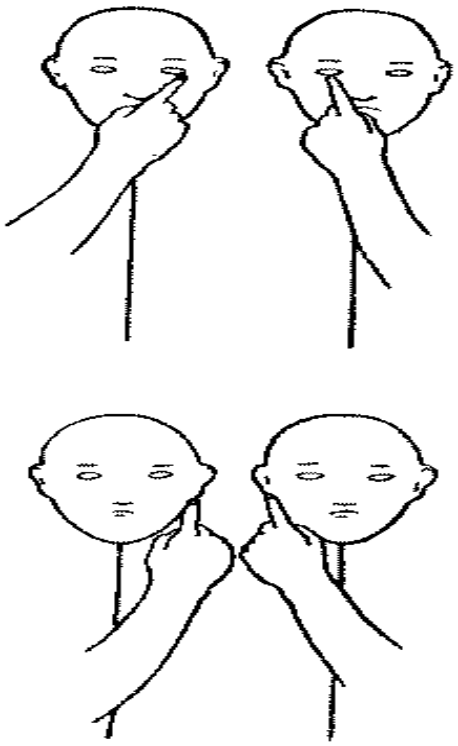


Figure-4.Spatialpraxis.A patient is asked to close his left eye with the right hand, and to touch his right ear with his left hand. (Head's test).

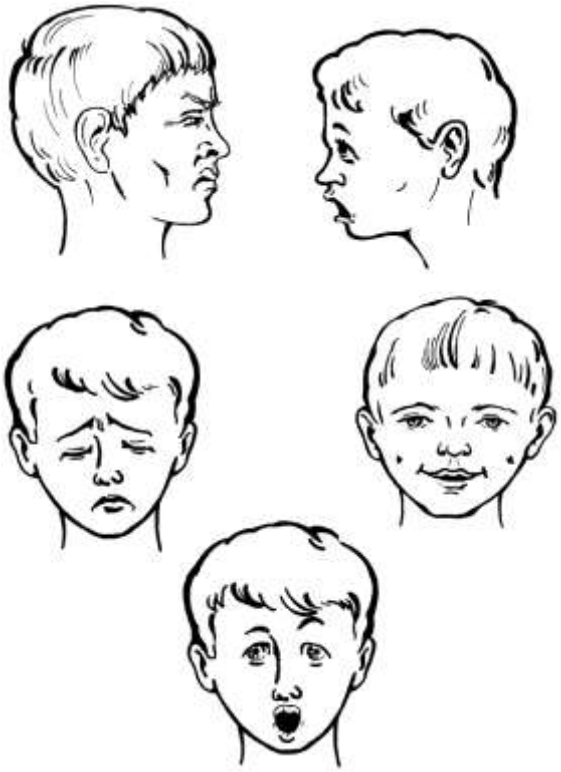


Figure-5. Oralpraxis. .A patient is asked toperform various mimic movements.(with verbalinstructions and performing by an observer himself or showing the picture above).

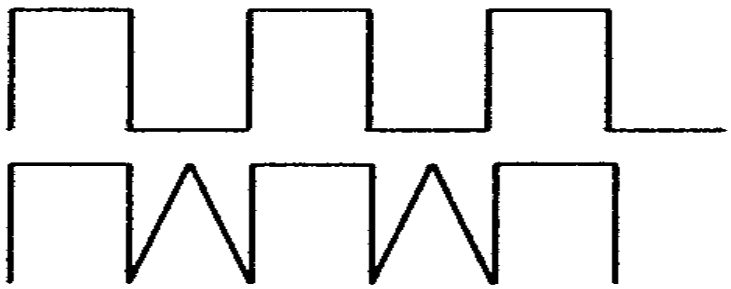


Figure-6. Kinetic(dynamic) praxis. "The lattice wall" test. *Instruction*: Look at this lattice, and draw it without tearing your hands away from the paper.

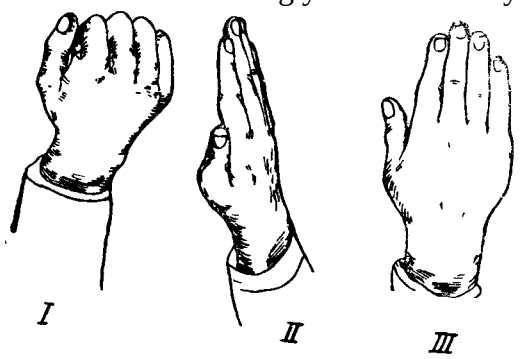


Figure-7. Kinetic(dynamic) praxis. A patient is asked toclench his fist(I), "chopping" position of palm(II) and "palm position" (III).

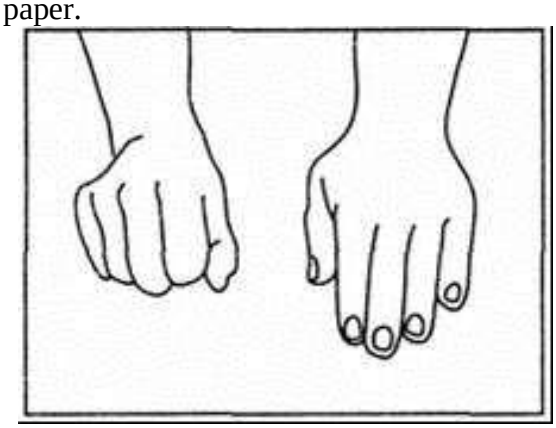


Figure-8. Dynamic (kinetic) praxis. Riciprocal movements.A patient is asked toput both of his hands in his lap and to open and close his fingers by turns.

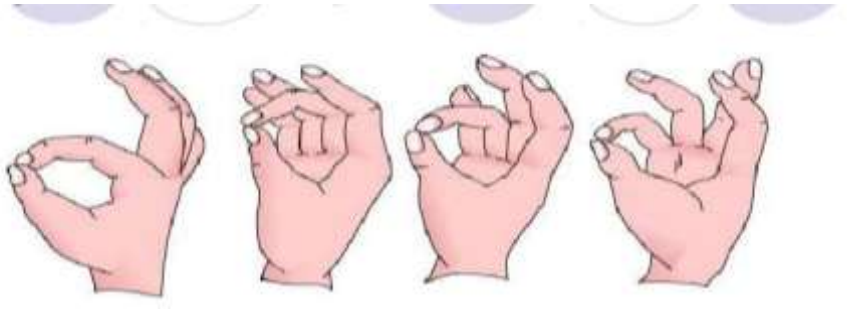


Figure-9. Dynamic(kinetic) praxis. With the thumb of right handtouch your index, long finger, ring finger and little fingersequentially.draw attention to the sequence and speed of performance.Do the same with your left fingers.

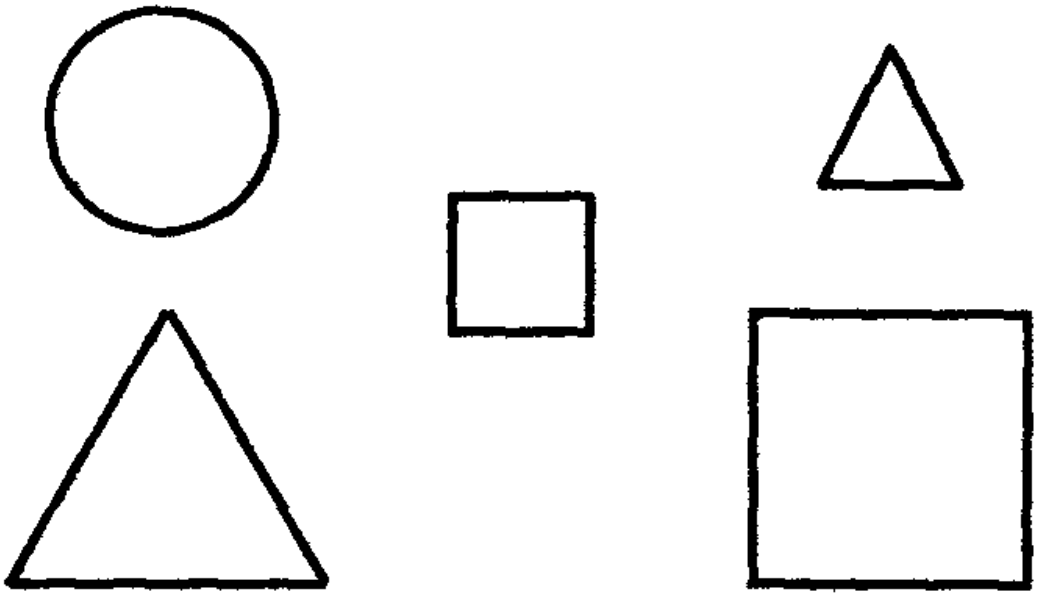


Figure-10. Konstructivepraxis. A patient is asked for drawing this geometrical figures exactly in this position. Even the form and size should be axactly the same.

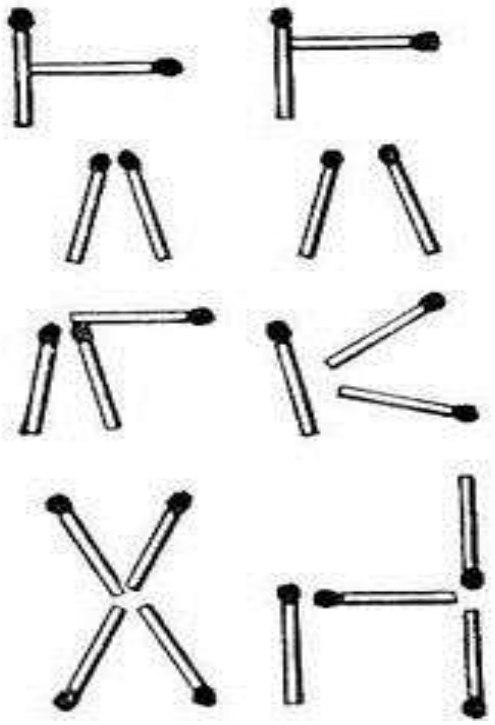


Figure-11. Konstructivepraxis. A patient is asked for making figures with the help of match-woods (with verbalinstructions and performing by an observer himself).

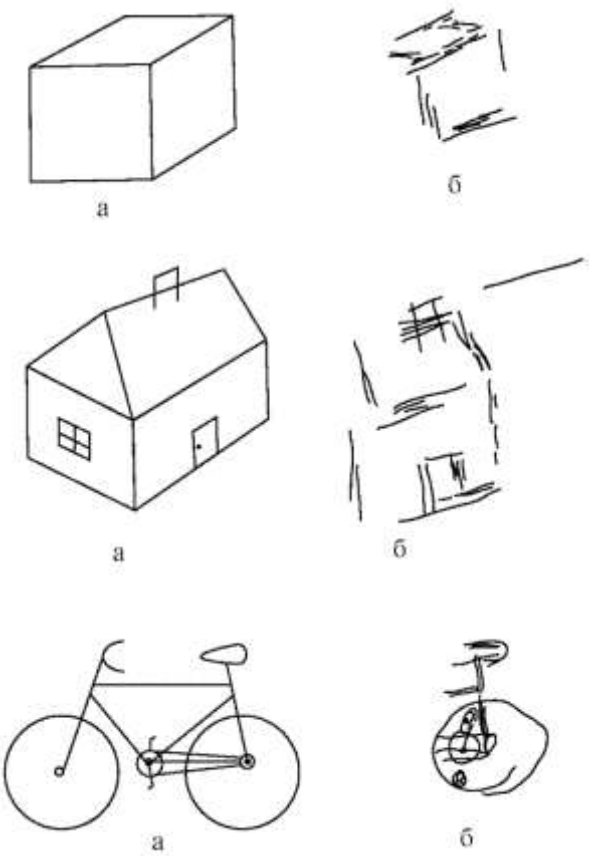


Figure-12. Konstructivepraxis. Copying: a-original pictures; b-copied pictures.

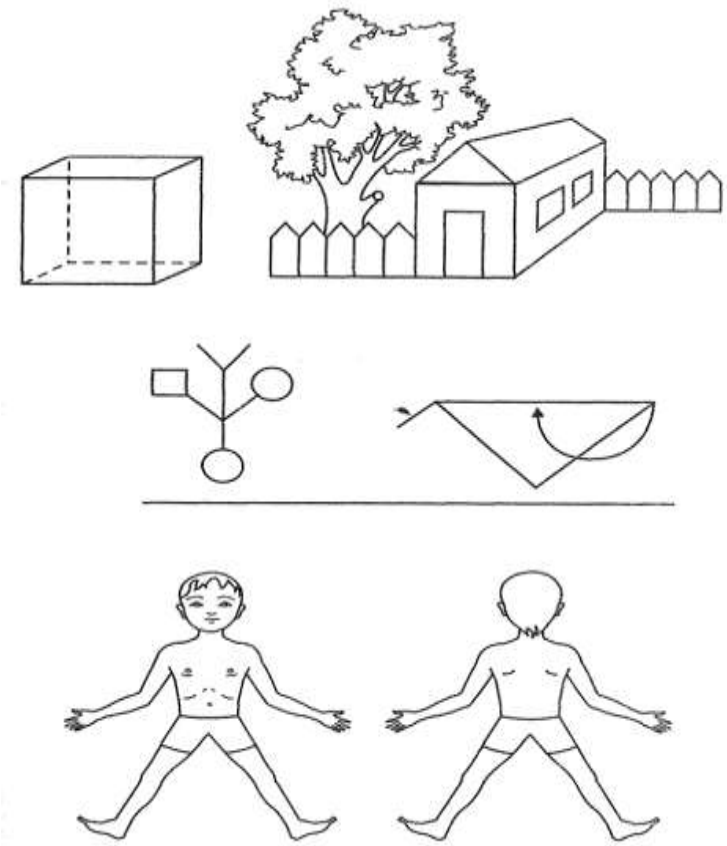


Figure-13. Konstructivepraxis. A patient is asked for copying images given above.

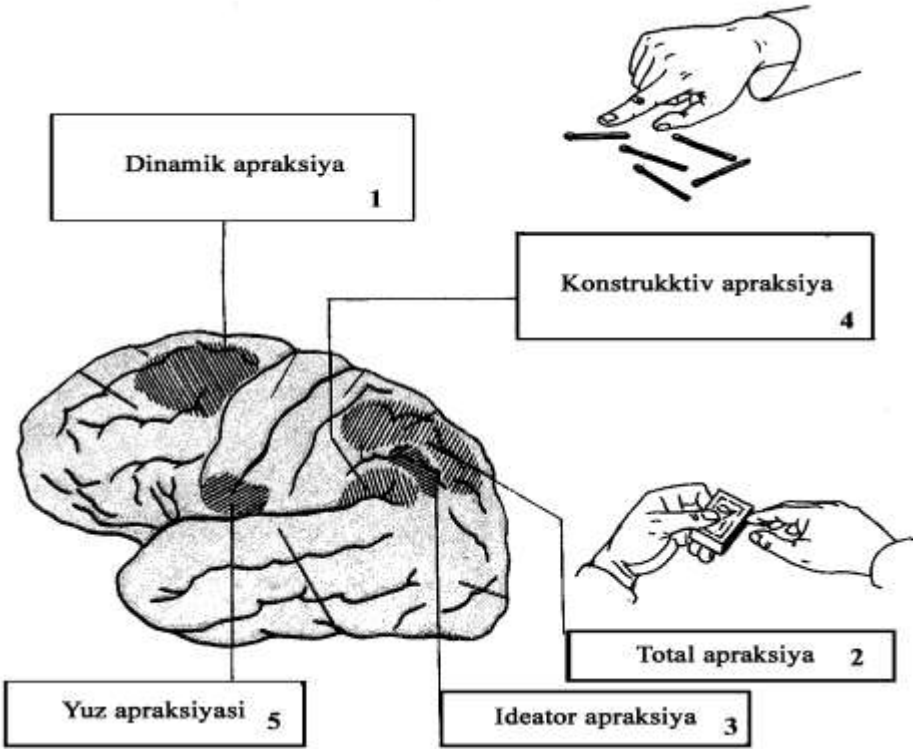


Figure-14.Bain zones which cause apraxia when they are damaged.

Examination of speech function

Examination of speech functionis started with simple methods using letters, numbers andphonemes.During the examination we should draw attention to the motor and sensory sides of speech.

SPONTANOUSANDCONVERSATIONAL SPEECH

A patient is given simple questions:
What is your name?
How are you?
How old are you?
Patient gives short answers like “yes/no, good/bad”.

AUTOMATIC SPEECH

Task №1.Count from 1 to 10: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

Task №2. Enumerate the daysof week: monday, tuesday, wednesday, thursday, friday, saturday, sunday.

Task №3. Enumerate the months:january, february, march, april, may, june, july, august, september, october, november, december

REPETITIVE SPEECH

Repeat the vowel sound: AOI E, U, YU.

Repeatthe consonants:M, N, P, L, T, K

Repeatthevoiced and unvoiced sounds:

B-P, P-B, D-T, T-D, Z-S, S-Z

Repeatthe sound combinations:
BI-BA-BO; BA-BO-BI; BA-BI-BA

Repeatthe words:
UY (HOUSE), TOL (WILLOW), CHOL (OLDMAN), OYNA (WINDOW),BOLA (CHILD), CHOYNAK (TEAPOT),TROLLEYBUS, TRALI-VALI, TARALABEDOD (IDLENESS)

Repeatthe word combinations;
QILOQ-BURUN-KO'Z(EAR-NOSE-EYE)
KO'Z-QULOQ-BURUN (EYE-EAR-NOSE)

Repeatthe sentences:
QIRQ KOKILLI QIZALOQ.
SEPKILLI SAYYORA SOYGA SAKRADI.
QARG'ALAR QARAG'AYGA QO'NA OLMAY QAYTIB KETISHDI.

Understanding the meaning of simple words.

1. KO'ZINGIZNI YUMING. (CLOSE YOUR EYES)
2. OG'ZINGIZNI OCHING. (OPEN YOUR MOUSE)
3. TILINGIZNI CHIQARING. (STICK

YOURTONGUE OUT)

Understanding the simple grammatical constructions.

1. O’ng qo’lingizni ko’taring. (Put your hand up)
2. Qoshiqni choynak yoniga qo’ying. (put the spoon near the teapot)
3. Chap qo’lingiz bilan o’ng ko’zingizni ko’rsating. (show your right eye with your left hand)

Understanding the complicatedgrammatical constructions.

1. Qalamni o’ng qo’linigizga olib kitobning ichiga qo’ying. (take the pen with your right hand and put it in the book)
2. Sochiqni yostiqning tagiga qo’ying; (put the towel under the cushion)
3. Piyolani chap qo’lingiz bilan olib o’ng tomonga qo’ying; (take the cup with your left hand and put it to the right side)
4. Lola Karimdan oqroq, demak kim qora; (Lola is more fair-skinned than Karim?Who is swarthier?)
5. Onasining singlisi unga kim bo’ladi? (How we call mother’s sister?)
6. Akasining otasi ukasiga kim bo’ladi? (The father of your brother. Who is he for you?)

Examination of writing

A patient should be asked about his complaints: forgetting letters, missing the letters, changing their position and configuration.

Automatic writing:
Full name: **QOBULOV DAVRON OLIMOVICH**

Writing the letters:

1. Copying block letters(single, paired)
2. Verbally instruct the patient to write letters (single, paired)
3. **H, T, O, L, S, A, SA, LH, TR, OCH, DO, VE, DS**

Writing words:

1. Copying the words: **LOLA, BOG', PIYOLA, LAGAN, BALIQ**

2. Verbally instruct the patient to write simple words: **OT**, **OYNA, ODAM, QOSHIQ**

3. Verbally instruct the patient to write voiced and unvoiced consonants (or paronyms):

OLAM-ODAM, SANAM-SALOM, TIRNOQ-TURMOQ

4. Verbally instruct the patient to write complex words: **URBANIZATSIYA, SIGNALIZATSIYA, SIVILIZATSIYA**

Write the sentence:

1. Copy the sentence: **QUYOSH CHIQDI**
2. Verbally instruct the patient to write the sentence: **YOMG'IR YOG'MOQDA**

Examination of reading

A patient should be asked about his complaints: disabilities or difficulties in reading letters, words and sentences.

Reading the letters:

1. block letters: **K, S, G, D, A, O, A, D**
2. handwrittenletters: *H, Z, X, C, B, M, L, F*

Reading the names of countries and cities:
O'ZBEKISTON, GERMANIYA, TOSHKENT, PARIJ, TOKIYO, MILAN, SAMARQAND

Reading the simple words and sentences:
OLCHA, TAXTA, SAROY, DARS TUGADI, METROGA TUSHDIM

Reading the rare sophisticated words:
DELFINARIYA, ANDROLOGIYA, ELEKTROENSEFALOGRAFIYA

Reading the sentences from short stories:

TULKI QUYONNI QUVIB BORAR EDI… (should be drawn attention to the eye movements, missing words, denying the right or lift side of the text)

Examination of memory

A patient should be asked about his complaints: Can he remember his name, familiar numbers, streets, recently happened events, or no?

Remembering the numbers:
3-6-9
4-8-2
3-5-2-9
4-2-7-1-8
5-8-2-6-3-6-3

Remembering the words:
He should keep these words in mind and recall them immediately, after certain time and after interference:
Uy-olma-mix (house-apple-nail)
Soy-nina-chiroq-taxta-kalit (brook-needle-light-wood-key)

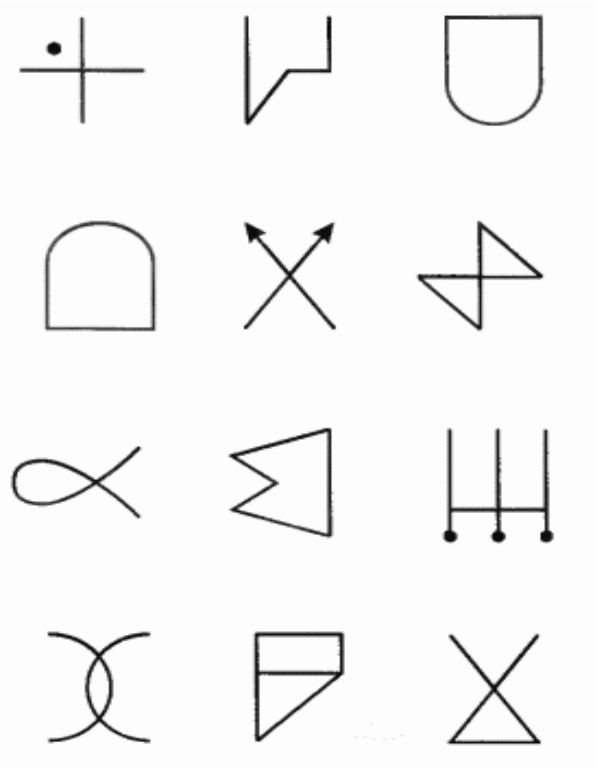
Method of "memorizing 10 words".Patient is said 10 unrelated words and he may recall them in any order.For instance, *house, apple, pen, sky, iron, horse, flower, paper, river, flower.*After some seconds, patient should repeat these words. It will be continued till the patient says all words. It means that an observer should say these words again and the patient should repeat them.

For the 1st time of saying and repeating
For the 2nd time of saying and repeating
For the 3rd time of saying and repeating
For the 4th time of saying and repeating
For the 5th time of saying and repeating
For the 6th time of saying and repeating
For the 7th time of saying and repeating
For the 8th time of saying and repeating
For the 9th time of saying and repeating
For the 10th time of saying and repeating

Usually it takes 5-6 attempts to recall all 10 words to mind. If the patient takes it fully in 2-3 attempts, it will be evaluated as **an excellentmemory.** If the patient takes it fully in 5-6 attempts, it will be evaluated as **a goodmemory.** If the patient takes it fully in 7-8 attempts, it will be evaluated as **a low memory.** If the patient takes it fully in 9-10 attempts, it will be evaluated as **a very low memory.** These words should be asked to repeat them after 30 minutes by the patient. But the patient shouldn't be warned about it.

To remember various geometrical figures. A patient is given12geometrical figures which should be memorized in 3 minutes. Then, figures being memorized, should be drawn in another paper.

Figure-1. Memorizing figures:



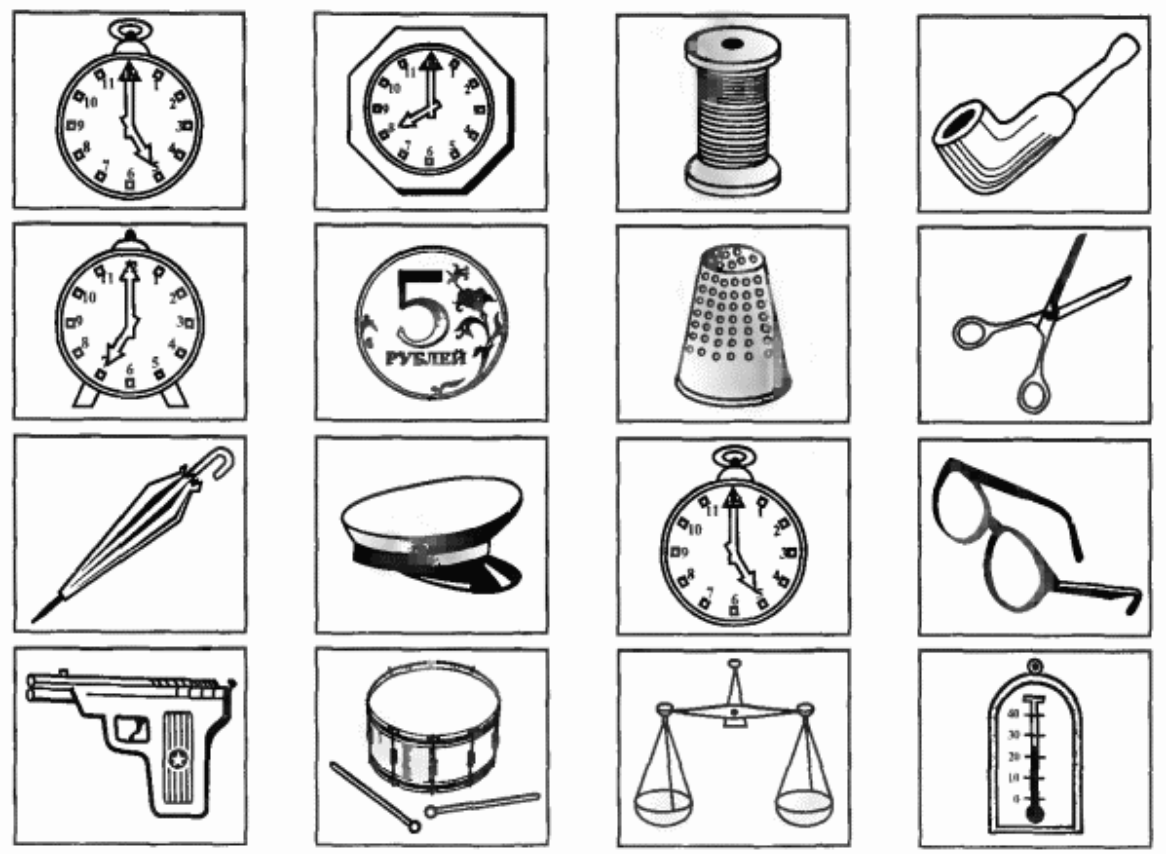
A special space to draw the memorized figures:

Figure-2. Memorizing numbers

22	25	7	21	11
6	2	10	3	23
17	12	16	5	18
1	15	20	9	24
19	13	4	14	8

A special space to draw the memorized figures:

Figure-3. Tanish narsalarni eslab qolib nomini aytish. A patient isshown 8 pictures and is asked to remember them. If it is identified that he has a good memory, he'll be asked to remember 16 pictures. For 8 pictures should be given60 sec., for 16 pictures - 120 sec. When time is out, the patient should begin to say the names of memorized items.An observer should record the pictures which have been told by the patient.



Remembering simple sentences.

1. A big garden
2. A doctor is examining the patient.
3. Children are doing their homeworks.

The patient is asked to remember sentences above. Then, he'll do some simple arithmetical operations (2+7=; 12+10=; 9+6=) and, after a while, he is asked to retell those sentences by heart.

Remembering the stories.

An observer tells any short story only once. The patient should repeat it without missing the words. *One man had a hen. The hen laid golden eggs. The owner had thought that hen is full of gold in it and killed it. But, it was as the same as other hens.*

Examination of calculation

Counting: Counting the points drawn in a paper.

Reading and writingthe **simple numbers** (1, 2, 3, 4, 5, 6, 7, 8, 9, 10)

Reading the **complexnumbers** (78, 87, 19, 91, 107, 4807, 10126)

Writing the **complexnumbers** (78, 87, 19, 91, 107, 4807, 10126)

Doing **simple arithmetical operations** orally (3-1; 5+2; 6-4; 8:2; 2x3)

Doing **simple arithmetical operations** in written form(4-2; 7+3; 8-1; 6:2; 3x3)

Doing **a little complicated arithmetical operations** (13+7-2=; 14+7-2=; 21+4-2=

Doing **serial** (“by turn”) calculations(100-7=; 93-7=; 86-7=; 79-7=; 72-7=

Examination of intellect

Method of «Excluding the unnecessary one»

A patient is shown a written line which consists of names of animals, flowers and things.And he should exclude one of them which is odd to this line of words..

Instruction: *Read the following words and find the odd word in a row. You should explain, why is this word odd to this row?*

1. Duck, fish, hen, turkey, cock.
2. Cabbage, carrot, summer radish, apple, turnip.
3. Book, copybook, chair, notebook, paper.
4. TV, radio, computer, telephone, wall.
5. Saw, hammer, nail, axe, cradle, tesha.
6. gold, silver, copper, aluminium, iron.
7. Paris, London, Berne, Rim, Tokio, Kopenhagen.
8. Austria, Germany, France, Italy, Norway, Oslo.
9. sheep, dog, goat, horse, hen, cock, wolf.
10. coffee, tea, wine, milk, juice, porridge.

This is the simpliest method of checking the thinking ability. They can be provided both orally and with the help of images.

«Choose and show»method

A patient is showna number of various objects (in a written form or images). He should watch them attentively and arrange them in particular order..

Instruction:

1. Arrangeitems in descending orderin consideration of speed of flight: *rocket, eagle, arrow, helicopter, plane.*
2. Arrangeitems in descending orderin consideration oflighting degree: *projector, lantern, moon, sun, lamp, candle.*
3. Arrangeanimals in ascending orderin consideration of theirsluggishness:*rabbit, tortoise, hedgehog, crocodile, panterra.*
4. Arrangeanimals in descending orderin consideration of their tail’s length: *camel, rabbit, squirrel, hedgehog.*
5. Arrangeitems in descending orderin consideration of their warmth-keeping ability:*undershirt, top coat, dress, suit.*
6. Arrange places in descending orderin consideration of their length: *Tashkent TV tower, Eiffel tower, Rio-de JaneyroTV tower, Ostankino TV tower.*
7. Arrange regions in descending orderin consideration of greatness in their area: *Navoi, Kashkadarya, Khorasm, Fergana, Tashkent.*
8. Which scientist was born earlier than others? Arrange in descending

order: *Navoi, Avicenna, Hyppocratus, Galen, Aristotle, Plato, Babur.*

9. Whichmetal is a good conductor of heat? Arrange in descending order: copper, aluminium, gold, iron.

Method of examination of thinking activity.

A patient is given various tasks and time should be fixed. Each task is done within 1 minute.

Instruction-1*. «I'll fix the time. And you should write names of cities (countries, rivers, women, men and ect.) beginning with "A" within 1 minute.You should write as more as you know».* When time is out, the paper will be picked. As much s/he wrote the names correctly, as good his thinking activity.

Instruction-2. "*Write down all properties of Tashkent within 1 minute.But don't take orphographic and stylistic mistakes. Without shortening".*

Thinking activity (ability) may be checked in this order. Other subjects: well-known fruits and vegetables, animals, geometrical figures. This task shows the degree of memorization.

Instruction-3. «*Make sentences within 1 minute using the letters belowI, L, N, L, M*». For instance: «I love my native land». Sentences should be correct by their meaning.When time is out, number of correct sentences should be counted.

4. Method of creating analogies.A patient is shown a sheet with various words in it. And he should write appropriate words on the opposite sides of them. Time should be fixeddependingon the amount of the words(1, 3, 5 minutes). For instance, ten – *number*, dog – *animal*, fir-tree – *tree*, winter – *cold*, word – *sentence*, liver – *organ*, psychology – *subject*, monday – *day of the week*, telephone – *communication medium*, Tashkent – *capital*or Tashkent – *city*and ect. This test may be performed orally.

5. Understanding the meaning of proverbs and aphorisms. A patient is said various proverbs and aphorisms.A patient should explain their meaning.The time isn't limited.For instance, "Temirni qiziganda bos"; "Shamol bo'lmasa daraxtning uchi qimirlamaydi", "Ko'rpanga qarab oyoq uzat", "Baliq boshidan sasiydi", "Daraxtni chopsa, uning shoxlari uchadi", "Hamma yaltiragan narsa ham oltin bo'lavermaydi", "Chumchuqdan qo'rqqan tariq ekmaydi", "Nima eksang, shuni o'rasan", "Yolg'iz otning changi chiqmas, changi chiqsa ham dong'i chiqmas", "Bo'ridan qo'rqqan o'rmonga bormas", "Yetti marta o'lchab, bir marta kes", "Tilim mening, dushmanim mening", "Bukrini go'r to'g'irlaydi", "Bir bolaga yetti mahalla ota-ona", "Jo'jani kuzda sanashadi", "Kiyimga qarab kutib olishadi, aqliga qarab kuzatib qo'yishadi", "Tomdan tarasha tushgandek", "Er-xotinning urushi, doka ro'molning qurishi" and ect.

5. **Solving simple math problems:**
   A) Solving simple mathematical problems: How many kg of apple can we buy for 20 000 sums, if 1 kg of apple costs 6 000 sums? And how much the change we get?
   B) The length of the candle reaches 15 sm, and the length of its shade extends for 45 sm. How many times is the shadow longer than the candle itself?

Explain the pictures where have been demonstrated different situations

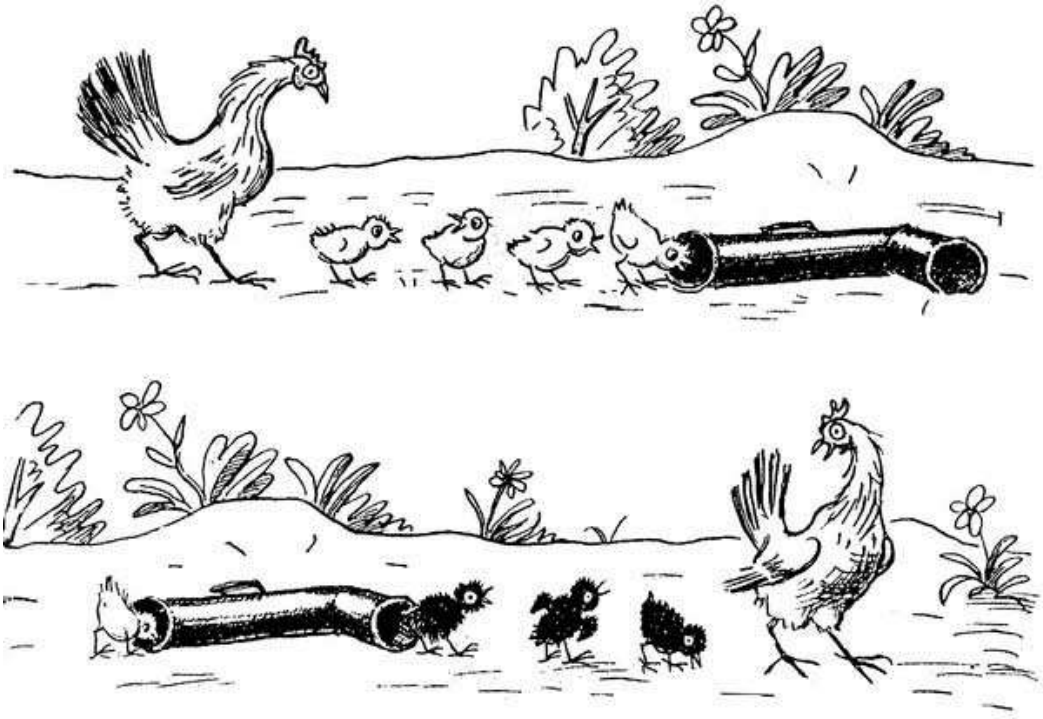


Figure-1. What's happened here? Tell it in details.

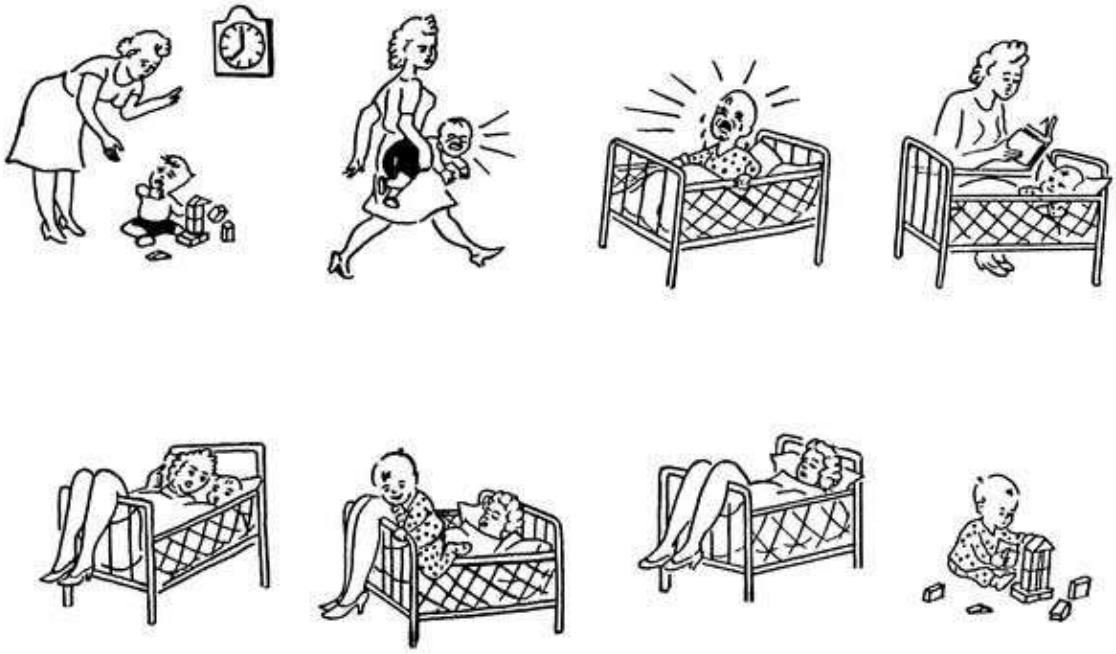


Figure-2. What's happened here? Tell it in details.

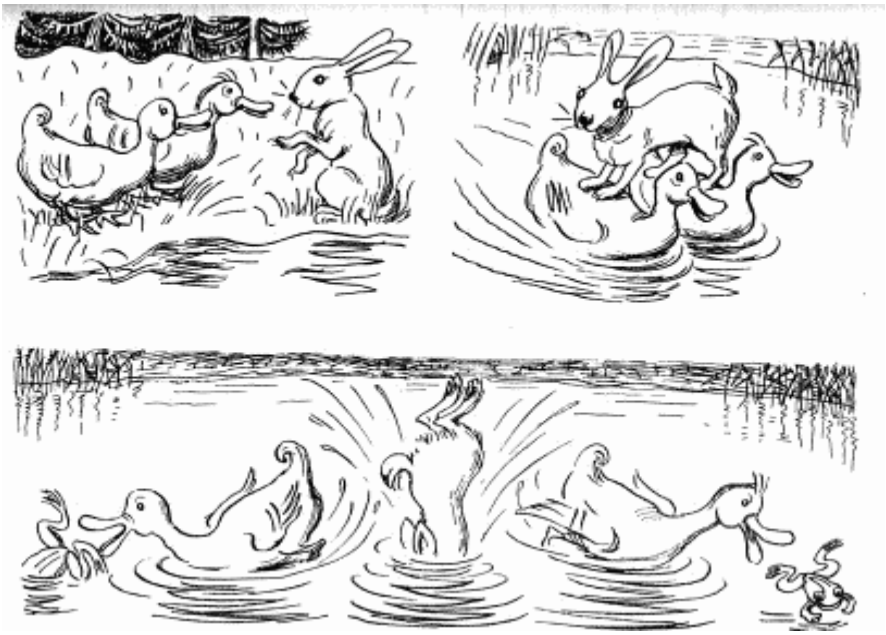


Figure-3. What's happened here? Tell it in details.

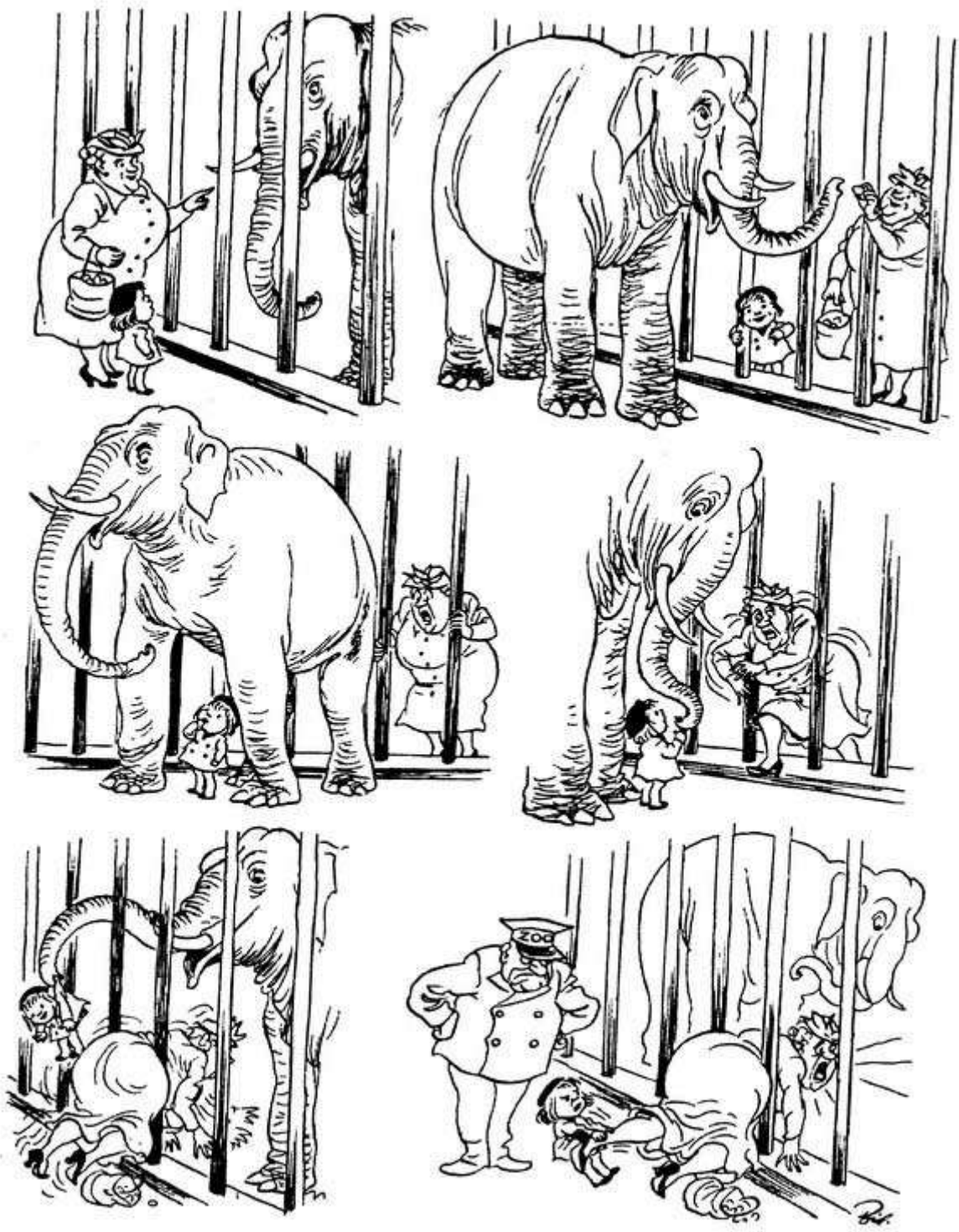


Figure-4. What's happened here? Tell it in details.

CHAPTER III. PROTOCOLS OF NEUROPSYCHOLOGICAL EXAMINATION

PROTOCOL OF THE EXAMINATION OF INTERHEMISPHERIC FUNCTIONAL ASYMMETRY
(testing the right-handedness, left-handedness and abmidexterness)

Patient_____; age____; sex____; date_____

№	Questions	With right hand	With left hand	With both of them
1	Which hand did he use to eat, write and draw in childhood?			
2	Which hand does he use to hold the spoon while eating?			
3	Which hand does he use to write?			
4	Which hand does he use to draw?			
5	Which hand does he use to hold the comb?			
6	Which hand does he use to hold the knife?			
7	Which hand does he use to hold the cup while drinking?			
8	Which hand does he use to hold the scissors?			
9	Which hand does he use to hold thehammer?			
10	Which hand does he use to throw the stick?			
11	Which hand does he use to hold the toothbrush?			
12	Which next of kin is right-hander or left-hander?			
	Results of objective examination			
1	Make your fingers a “chain”			
2	Clap your hands.			
3	Fold your arms on your chest.			
4	Wind up the watch.			
5	Hearingacuity.			
6	Draw a square or cycle.			
7	Take the pen on the table.			
8	Pick the thing up on the floor.			
9	Hop on one leg.			
10	Cross your legs.			
11	Spin round your axis.			
12	Listen to the ticking of a clock bringing nearer to your ears.			
13	Raise one of your eyebrows			
14	Rollup your fingers into a tube and look far			

Date "____"_____y. Attendance%_____

Master student_____ (signature)

Supervisor_____ (signature)

PROTOCOL OF THE EXAMINATION OF GNOSIS

Patient_____; age____; sex____; date_____

№	Examination of gnosis	Performance		
		Correct (0 point)	Uncorrect (1 point)	Not able to perform (2 points)
	Visual gnosis			
1	**Agnosiafor objects:** - Recognition of real things Recognition of things in the pictures Recognition of posterized images - Poppelreyter's test - Recognition of conflicting images (fish-rabbit)			
2	**Prozopagnosia** - Recognition of people around - Recognition of famous people by their photos			
3	**Agnosiafor colors:** - recognition of colors (special standart) - color of fruits (orange, cucubmer, pomegranate)			
4	**Agnosiafor letters:** - recognition of different letters in various fonts - recognition of inversely written letters - recognition of superimposedletters - recognition of strikethrough letters			
5	**Agnosiafor numbers:** - recognition of Arabic and Roman numerals - recognition of numeralsin various fonts - recognition of inversely written numerals - recognition of superimposed numerals - recognition of strikethrough numerals			
6	**Simultanous agnosia:** - drawing eye-glasses or bicycle - recognition of square in the cycle - copying geometrical figures - copying the text correctly			
7	**Visual-spatial agnosia:** - Tell the time on real watches - Tell the time on watches without clock dial (without numbers) - space orientation:recognition of his location (his ward, kitchen) - identify the western, eastern, southern and northern sides of the Earth in the geographical map - calling city landmarks correctly			

	- drawing geometrical figures (table, square, cube, house) - copying geometrical figures correctly - drawing the position of objects in the ward - divide the line in half (SOPA) - divide the complex figures into right and left sides (SOPA)			
Auditory agnosia				
1	- recognition of items (creaking of the door,key) from their sounds - recognition of the music - Saying the number of knocks on the table (II-III, I-III-II, III-I-II) and repeating them			
Somatosensory agnosia				
1	- tactile gnosis:feeling tough, soft and uneven items			
2	- stereognosis: feeling the items (key, coin,pin). With the right hand and left hand.			
3	- defining the localisation (face, arm, trunk, leg)			
4	- defining the sense of discriminatory touch			
5	- Ferster's test (defining the figures drawn on your body)			
6	- Showing the postures of one hand with another hand.			
7	- Showing the right and left sides of his body.			
8	- Showing the right and left sides of the person on the opposite side			
9	- Saying the names of fingers (1,2,3,4,5)			
10	- Saying names of body parts (arm, leg, head). If he can't – anozognosia.			
11	- Dispose the parts of body (arm, leg, head). If he can't– aytotopognosia.			
Olfactory agnosia				
1	The patient inhales various smells and says the names of them.			
Gustatory agnosia				
1	The patienttastes some substants and says the names of them.			
Total score				
Don't hasten the patient during test, don't correct answers after every mistake, make pauses after answers and encourage him periodically.Time limit shouldn'texceed15-20 minutes.				

Conclusion_____
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Date "____"_____y. Attendance%_____

Master student_____ (signature)

Supervisor_____ (signature)

PROTOCOL OF THE EXAMINATION OF PRAXIS

Patient_____; age____; sex____; date_____

№	Examination of praxis	Performance		
		Correct (0 point)	Uncorrect (1 point)	Not able to perform (2 points)
1	**Simple instructions** (with right hand, with left hand). To clench the fist, making a "chain", repeating the left hand's position with the right hand.			
2	**Praxis of position** (with right hand, with left hand). - On the horizontal plane - On the vertical plane			
3	**Dynamic (kinetic) praxis:** - fist-rib-palm; rib-palm-fist. - "1-2-5" and "2-4-3" test			
4	**Spatial praxis:** - One arm test (arm – chin) - Two arms test (arm – arm) - Head'stest: close your left eye with your right hand, and touch your right ear with your left hand			
5	**Oral praxis:** (instructions; repetitions). Show your teeth, pout your lips, make your tongue touch your upper lip, lower lip, give yourself airs, roll up your tongue into a tube.			
6	**Constructive praxis:** - Make rhombus, square, triangle with the help of match-woods (with verbalinstructions and performing by an observer himself); - Draw various geometrical figures (with verbalinstructions and performing by an observer himself). Turn them on the horizontal and vertical planes.			
7	**Ideatory praxis:**how to strike a match, to hammer a nail, to make a knot.			
8	**Reciprocal coordination:** put both of your hands in your lap, open and close your fingers by turns.			
	Total score			
Don't hasten the patient during test and encourage him periodically.				

Conclusion_____
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Date "____"_____y. Attendance%_____

Master student_____ (signature)

Supervisor_____ (signature)

PROTOCOL OF THE EXAMINATION OF SPEECH FUNCTION

Patient_____; age____; sex____; date_____

№	Examination of speech function	Performance		
		Correct (0 point)	Uncorrect (1 point)	Not able to perform (2 points)
	Examination of expressive speech			
1	**Spontanous and dialogicalspeech:** A patient is given simple questions:What is your name?How are you? How old are you?Patient gives short answers like "yes/no, good/bad".			
2	**Automatic speech:**The patient is asked to count from 1 to 10, days of the week and months.			
3	**Repetitivespeech:**The patient should repeat followings. - vowel (a,o,u,i,e,yu) andconsonant (m,n,p,d,l,t,k) sounds; - voiced and unvoiced sounds (b-p, p-b, d-t, t-d, z-s, s-z); - sound combinations (bi-ba-bo; ba-bo-bi; uy-tol-suv); - sentences (a child is having breakfast, he drinks water)			
	Examination of impressive speech			
1	**Understanding the meaning of simple words**.Close your eyes, stick your tongue out, put your hands up.			
2	**Giving names** (by album). apple, horse, lemon, flower. Calling parts of the body: eye, arm, ear, nose, elbow.			
3	**Understanding the simple grammatical constructions.** Put your right hand up,show your right eye with your left hand.			
4	**Understanding the complicated grammatical constructions.** take the pen and show the book, put the towel under the cushion, take the cup with your left hand and put it to the right side, Lola is more fair-skinned than Karim? Who is swarthier?How we call mother's sister?The father of your brother. Who is he for you?			
	Total score			
Don't hasten the patient during test, don't correct answers after every mistake, make pauses after				

answers and encourage him periodically.

Conclusion_____
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Date "____"_____y. Attendance%_____

Master student_____ (signature)

Supervisor_____ (signature)

PROTOCOL OF THE EXAMINATION OF WRITING

Patient_____; age____; sex____; date_____

A patient should be asked about his complaints: forgetting letters, missing the letters, changing their position and configuration.			
Examination of writing	**Performance**		
	Correct (0 point)	Uncorrect (1 point)	Not able to perform (2 points)
Automatic writing: Full name: **QOBULOV DAVRON OLIMOVICH**			
Writing the letters: 1. Copying block letters (single, paired) 2. Verbally instruct the patient to write letters (single, paired) H, T, O, L, S, A, SA, LH, TR, OCH, DO, VE, DS			
Writing words: Copying the words: LOLA, BOG', PIYOLA, LAGAN, BALIQ Verbally instruct the patient to write simple words: OT, OYNA, ODAM, QOSHIQ Verbally instruct the patient to write voiced and unvoiced consonants (or paronyms): OLAM-ODAM, SANAM-SALOM, TIRNOQ-TURMOQ Verbally instruct the patient to write complex words: URBANIZATSIYA, SIGNALIZATSIYA, SIVILIZATSIYA			
Write the sentence: 3. Copy the sentence: QUYOSH CHIQDI 4. Verbally instruct the patient to write the sentence: YOMG'IR YOG'MOQDA			

Note: Agraphia is an acquired impairment of the writing ability.This syndromeoccursas a result of the damage of back part of the g.frontalis media. Butimpairment of the writing ability can be

seen after the damage of the structures ensuring visual-spatial processes. Ona number ofaphasias may appear secondary agraphias.

Conclusion_____
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Date "____"_____y. Attendance%_____

Master student_____ (signature)

Supervisor_____ (signature)

PROTOCOL OF THE EXAMINATION OF READING

A patient should be asked about his complaints: disabilities or difficulties in reading letters, words and sentences.

№	Examination of reading	Performance		
		Correct (0 point)	Uncorrect (1 point)	Not able to perform (2 points)
1	**Reading the letters:** 1. blockletters:K, S, G, D, A, O, A, D 2. handwrittenletters: *H, Z, X, C, B, M, L, F*			
2	**Reading the names of countries and cities:** **O'ZBEKISTON, GERMANIYA, TOSHKENT, PARIJ, TOKIYO, MILAN, SAMARQAND**			
3	**Reading the simple words and sentences:** **OLCHA, TAXTA, SAROY, DARS TUGADI, METROGA TUSHDIM**			
4	**Reading the rare sophisticated words:** **DELFINARIYA, ANDROLOGIYA, ELEKTROENSEFALOGRAFIYA**			
5	Reading the sentences from short stories: **TULKI QUYONNI QUVIB BORAR EDI…** (should be drawn attention to the eye movements, missing words, denying the right or lift side of the text)			
Total score				
Don't hasten the patient during test and encourage him periodically.				

Conclusion_____
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Date "____"_____y. Attendance%_____

Master student_____ (signature)

Supervisor_____ (signature)

PROTOCOL OF THE EXAMINATION OF CALCULATION

Patient_____; age____; sex____; date_____

№	Examination of calculation	Performance		
		Correct (0 point)	Uncorrect (1 point)	Not able to perform (2 points)
1	**Counting**: should be counted points in the paper.			
2	Reading and writing **simple numbers** (from 1 to 10)			
3	Reading **complex numbers** (78, 87, 19, 91, 107, 4807, 10126)			
4	Writing**complex numbers**(78, 87, 19, 91, 107, 4807, 10126)			
5	Doing **simple arithmetical operations** orally (3-1; 5+2; 6-4; 8:2; 2x3)			
6	Doing **simple arithmetical operations** in written form (4-2; 7+3; 8-1; 6:2; 3x3)			
7	Doing **a little complicated arithmetical operations** (13+7-2=) and ect.			
8	Doing serial (“by turn”) calculations (100-7=; 93-7=; 86-7=; 79-7=; 72-7=			
	Total score			
Don’t hasten the patient during test and encourage him periodically.				

Note: Acalculia is an acquired impairment of the calculating ability. Appears as a result of the damage of parieto-occipital zone of the brain cortex.

Conclusion_____
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Date "____"_____y. Attendance%_____

Master student_____ (signature)

Supervisor_____ (signature)

PROTOCOL OF THE EXAMINATION OF CALCULATION BY KREPELIN

Patient_____; age____; sex____; date_____

This method is used to examine the speed, stability of attention and degree of attention transference.Numbers should be written in columns in special sheets. The patient should do arithmetic operation and the results should be recorded in this sheets.

	5	6	4	4	4	0	8	6	7	3	2	3	7	8	6	7	3	2	3	7	0	8
+	2	7	8	6	7	8	7	5	2	8	3	2	9	7	5	2	8	3	2	9	8	7
	9	8	6	5	3	6	5	6	8	5	9	3	6	5	5	5	5	3	8	6	7	5
-	5	3	6	1	4	3	2	3	6	4	6	4	3	2	3	6	4	1	3	3	3	3
	8	4	2	1	5	4	4	5	4	6	8	2	4	4	5	4	6	8	2	4	4	4
+	6	7	3	2	3	7	8	4	3	5	4	4	8	8	4	3	5	4	4	8	7	8
	5	9	8	7	5	9	7	8	6	9	4	6	8	5	6	9	5	4	6	8	9	6
-	5	5	5	4	3	6	5	5	6	4	4	4	0	4	5	6	4	4	4	0	6	5
	3	6	4	6	4	3	6	2	7	8	6	7	8	6	2	7	8	6	7	8	3	6
+	5	4	6	8	2	4	2	4	8	9	8	3	6	2	4	8	9	8	3	6	4	2
	8	7	5	6	9	8	7	8	5	6	9	8	7	8	5	3	6	9	4	3	9	5
-	4	3	2	6	6	6	3	5	4	2	1	5	4	1	3	1	2	1	2	3	8	3
	2	3	3	7	8	2	8	6	7	3	2	3	7	8	6	7	3	2	3	7	6	2
+	9	5	7	8	7	1	7	5	2	8	3	2	9	7	5	2	8	3	2	9	3	3
	7	3	9	4	6	8	5	5	5	5	4	5	6	5	5	5	5	6	9	6	4	8
-	3	3	6	4	6	4	3	3	6	4	6	4	3	3	3	6	4	4	4	3	2	1
+	4	5	7	3	9	6	4	6	3	3	3	6	8	4	6	3	3	3	6	8	6	4
	8	1	3	4	7	5	5	5	6	4	4	4	0	5	5	6	4	4	4	0	5	5

After performing the task, the observer checks it and finds the patient's mistakes: amount of correctly solved tasks, speed of performance, quantity of mistakes, speed of passage from one column to another and ect.We can check almost all of the attention features, especially the degree of distractibility.

Form for results (it should be in observer)

Quantity of correctly calculated numbers	Quantity of incorrectly calculated numbers	Missed (uncalculated) numbers

Date "____"_____y. Attendance%_____

Master student_____ (signature)

Supervisor_____ (signature)

PROTOCOL OF THE EXAMINATION OF MEMORY

Patient_____; age____; sex____; date_____

№	Memory examination	Performance		
		Correct (0 point)	Uncorrect (1 point)	Not able to perform (2 points)
1	Remember and repeat words: water-needle-nail Should be said immediately Should be said after a while (the patient shouldn't be warned about it)			
2	Patient should memorize the numbers: 3-7-5 6-9-1-4 2-8-6-3-9 6-2-7-3-8-3			
3	Method of "memorizing 10 words" (should be recorded in a particular form)			
3	Checking the memory by the method of interference.Patient should be said 3 new words (wind, angle, eye-glasses) and should be asked to repeat them. Then he is asked to repeat previous 3 words.			
4	The patient is asked to try to keep in mind simple sentences: a big garden, a dog is barking, children are coming. Then patient should do some simple sums and try to recall those sentences above.			
	An observer tells any short story only once. The patient should repeat it without missing the words. *One man had a hen. The hen laid golden eggs. The owner had thought that hen is full of gold in it and killed it.But it was as the same as other hens.*			
	Total score			
Note: Don't hasten the patient during test and encourage him periodically.				

Conclusion_____
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Date "____"_____y. Attendance%_____

Master student_____ (signature)

Supervisor_____ (signature)

PROTOCOL OF THE EXAMINATION OF MEMORY

Method of “memorizing 10 words”

Patient_____; age____; sex____;

Patient is said 10 unrelated words and he may recall them in any order.For instance, *house, apple, pen, sky, iron, horse, flower, paper, river, flower.*After some seconds, patient should repeat these words. It will be continued till the patient says all words. It means that an observer should say these words again and the patient should repeat them. All information should be recorded in the table below.Usually it takes 5-6 attempts to recall all 10 words to mind. If the patient takes it fully in 2-3 attempts, it will be evaluated as **an excellentmemory.** If the patient takes it fully in 5-6 attempts, it will be evaluated as **a goodmemory.** If the patient takes it fully in 7-8 attempts, it will be evaluated as **a low memory.**If the patient takes it fully in 9-10 attempts, it will be evaluated as **a very low memory.** These words should be asked to repeat them after 30 minutes by the patient. But the patient shouldn’t be warned about it.

Checklist form

Name _____ age_____ date

№	1	2	3	4	5	6	7	8	9	10	Unnecessary word
	house	apple	pen	sky	iron	horse	flower	paper	river	frame	
1											
2											
3											
4											
5											
6											
7											
After 30 min.											

Conclusion_____
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Date "____"_____y. Attendance%_____

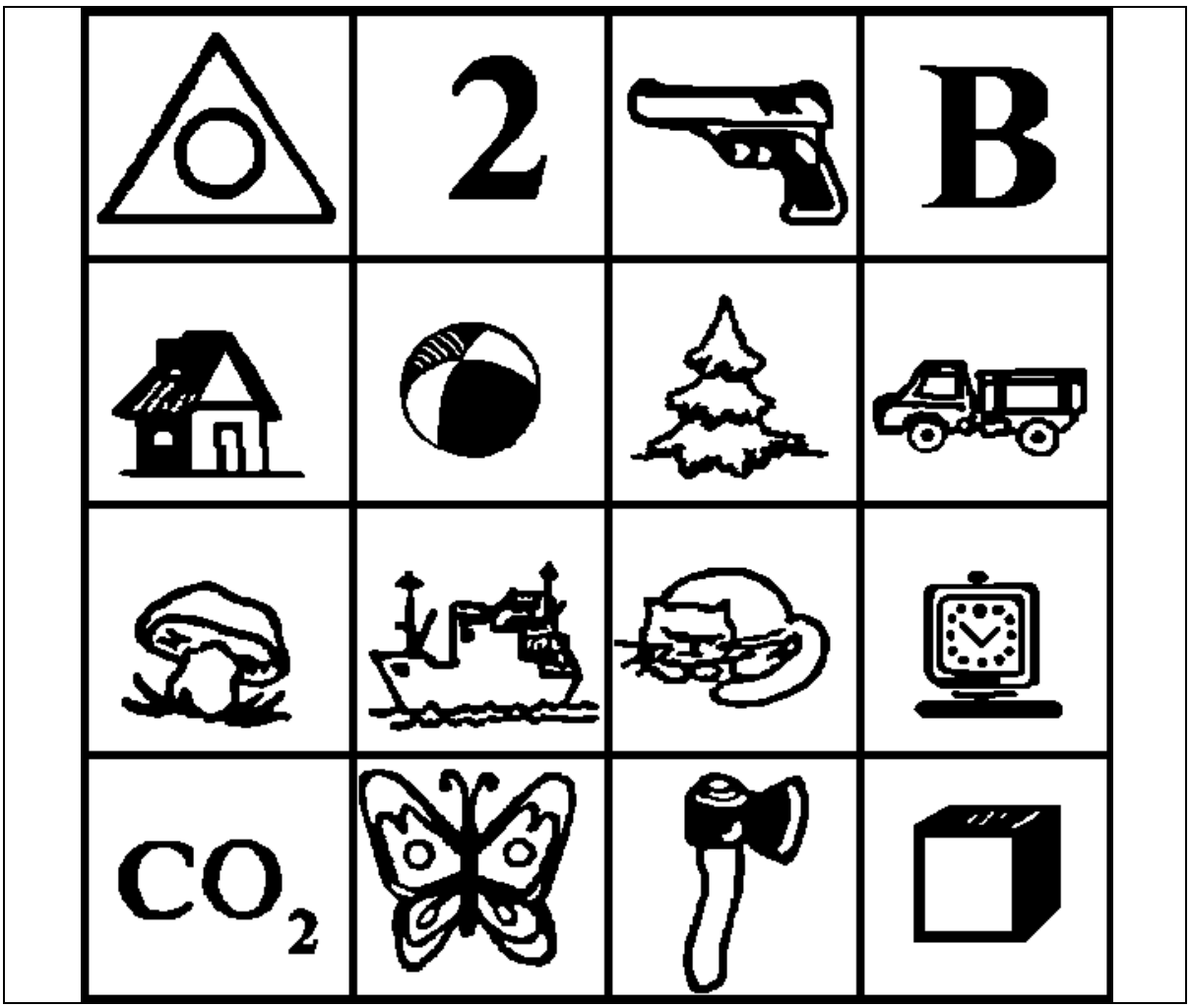
Master student_____ (signature)

Supervisor_____ (signature)

PROTOCOL OF THE EXAMINATION OF VISUAL MEMORY

Patient_____; Age____; Sex____; Date_____

The patient is shown 12 images and numbers. Patient should try to remember them during 2 minutes.Then patient will be asked to recall them to mind.



Criterion of estimation:
recalls4 photos – 1 point(Memory is very low)

recalls6 photos – 2 points(Memory is low)
recalls8 photos – 3 points(Memory is good)
recalls12 photos – 4 points(Memory is very good)
recalls all 16 photos one after another– 5 points(Memory is excellent)

Date "____"_____y. Attendance%_____

Master student_____ (signature)

Supervisor_____ (signature)

PROTOCOL OF THE EXAMINATION OF INTELLECT

Patient_____; Age____; Sex____; Date_____

№	Examination of intellect	Performance		
		Correct (0 point)	Incorrect (1 point)	Not able to perform (2 points)
1	Understanding the meaning of simple expression: "Boshing toshdan bo'lsin"; o'zingni angla			
2	Understanding the similarities and differences between objects: apple-orange; river-channel, country-city			
3	Solving simple mathematical problems: How many kg of apple can we buy for 20 000 sums, if 1 kg of applecosts 6 000 sums? And how much the change we get?			
4	Understanding the pictures of different situations (from neuropsychological album)			
5	The length of the candle reaches 15 sm, and the length of its shade extends for 45 sm. How many times is the shadow longer than the candle itself?			
6	Explaining the meaning of short stories. "The spider and the tortoise". "The fox and the stork"			
7	Explaining the meaning of folk proverbs and words of wisdom			
	Total			
Note: Don't hasten the patient during test and encourage him periodically.				

Conclusion_____
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Date "____"_____y. Attendance%_____

Master student_____ (signature)

Supervisor_____ (signature)

NEUROPSYCHOLOGICAL REPORT

Results of each examination should be recorded:

1. Results of the examination of Interhemispheric functional asymmetry_____
2. Results of the examination of gnosis _____
3. Results of the examination of praxis _____
4. Results of the examination of speech function _____
5. Results of the examination of counting_____
6. Results of the examination of writing_____
7. Results of the examination of reading _____
8. Results of the examination of memory _____
9. Results of the examination of intellect _____

On the basis of detected syndromes will be defined a niveau (topical) diagnosis. Whereupon, we can make more precise clinicaldiagnosis.

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