

Methods

Subjects

The study involved two patients aged 35 (D.D.C) and 45 (D.D.V) at the time of the first tests and 39 and 49 at the time of the last tests. Both subjects had undergone full Corpus Callosum resection in order to relieve drug-resistant epilepsy. In one of the two patients (D.D.C.) the anterior commissure was almost entirely removed as well. See Fabri et al., 2005, Pizzini et al., 2010, and Corballis et al., 2010, for detailed descriptions of these patients.

Stimulus presentation

For all experiments: size screen = 24 inch diagonal (48 cm wide, 38 cm high). Distance to the screen: 50 cm. Width screen = 51.2° of visual angle, i.e. the screen is horizontally extending 25.6° to either side of fixation.

height screen = 41.6° of visual angle, i.e. the screen is vertically extending 20.8° to either side of fixation.

Resolution screen: Experiments 1A, 1B, 3B, 4A, 4B: 1680 x 1050 pixels; other experiments resolution of the screen: 1920 x 1080 pixels.

Luminance and CIE (Commission Internationale de l'Éclairage) CIE x,y-values of background and stimuli in the different experiments were determined with a Tektronix photometer.

Procedure for trials.

t1 = start fixation, t2 = presentation item/items, t3 = offset of item/items.

All experiments, except Experiment 4A: the experimenter starts the trial when he sees on the eye tracker screen that the subject accurately fixates the middle of the test screen. This is followed by a varying time (1/30th - 3 seconds, randomly chosen period per trial), followed by presentation of an item or items for 0.1 - 0.15 seconds. Further, in all experiments, the experimenter can only see the eye tracker screen, he cannot see the test screen (which is only visible to the patient). Note that from here on we will refer to the crucial timepoints as t1 (start fixation), t2 (presentation item/items) and t3 (offset of item/items).

Finally, although the experimenter could not see the stimulus screen, he could see the subject. The experimenter ensured that cross-cueing (i.e. one hemisphere informing the other hemisphere through behavioral cues) did not occur. For instance, the experimenter made sure that the hands of the subject did not touch each other or the other half of the body during the trial.

Exp 4A: a sequence of automatically triggered trials, fixation appeared 1 second after the patient responded. Then there was 0.5 seconds of fixation, followed by the trial.

The patient responded verbally or by pointing with one of his hands to the screen. The experimenter then mouseclicked on a response box or location as indicated by the patient.

Criterion for exclusion of trials based on eye movements:

In all experiments we measured eye movements with an Eyelink 1000 (SR research, Mississauga, Ontario, Canada). Trials were excluded from further analysis if a saccade occurred between t1 and t3 with a horizontal amplitude larger than 40 pixels (40 pixels < 1.31° of visual angle). This is a conservative measure of saccades (generally eye movements up to 2° of visual angle are considered micro-saccades). Trials were also excluded if there were any missing eye positions between t1 and t3. Finally, at the start of the trial, the absolute measured X value had to be within 80 pixels of the objective center of the screen (again a conservative measure, since the only item on the screen during t2 is the fixation spot. It is quite unlikely, even difficult to fixate anywhere else than at this fixation spot).

For Experiment 4A drift was a lot higher (perhaps because of the rushed nature of the task, and the fact that the experimenter did not manually start every trial, which is a natural way of recalibrating every trial), therefore for this Experiment the exclusion criterion was that the X value had to be within 120 pixels of the actual X value for the center of the screen - again, prudently conservative. If he was in fact fixating somewhere else than the center of the screen at t1, he was most likely fixating at the side, or outside the screen, but this would result in an X difference with the center of > 800 pixels. Note moreover that just to be sure that a 120 pixel difference could not change the results, we excluded all trials where the X difference between the center of the presented circle and fixation was less than 204 pixels. Since the radius of the presented circle was 84 pixels, this means that now all trials were excluded where the X difference between the closest point of the circle and fixation was at least 120 pixels. Excluding the trials where the test item was closer than 204 pixels to fixation did not alter the pattern of results, in fact both patients performed a little bit (but not significantly) better when those trials were excluded.

Importantly, in all experiments the pattern of results was the same even when all trials with erroneous eye movements/fixations were included in the analysis.

1 Detect circles

Procedure: On half the trials nothing appeared, on the other half a red solid circle appeared anywhere on the screen. The subject indicated whether a circle had appeared and if so where (by pointing to a location or verbally indicating a location when he thought a circle had appeared, and by pointing to, or verbally indicating a box containing the word "absent"). If the patient indicated that he thought that no item had appeared, but one had in fact appeared, he had to guess the location of the presented circle.

There were 3 different runs for each subject; in one run he only responded with his left hand, in one run only with his right hand, and in one run he only responded verbally.

Trials were considered correct when he had accurately indicated that a circle had been presented, or when he had accurately indicated that no circle had been presented. Trials where no circle was presented, but he indicated that a circle had been present were labelled as false alarms.

Stimuli

Sizes:

fixation spot: diameter = 0.49° of visual angle

red solid circle: radius = 2.8° of visual angle

position

Fixation spot: center of the screen

Red solid circle: anywhere on the screen.

color/luminance

Background: grey: rgb: 80,80,80: (CIE x,y): 0.279, 0.304; luminance: 5.56 cd/m².

color Fixation spot: black: rgb: 0,0,0. luminance: 0 cd/m².

color red solid circle: red, rgb: 200,0,0. (CIE x,y): 0.641, 0.341; luminance: 7.1 cd/m².

Experimental trials

1 block consisted of 24 trials.

DDV executed 2 blocks of 24 trials while responding with the right hand, 2 blocks of 24 trials while responding with the left hand, and 2 blocks of 24 trials responding verbally.

DDC executed 4 blocks of 24 trials with the right hand, 2 blocks of 24 trials with the left hand, 5 blocks of 24 trials verbally.

Timing

Each trial started with a fixation spot (and an otherwise empty screen) for 0.5 seconds. This was followed by a red solid circle appearing anywhere on the screen for 0.12 seconds. Then the patient gave his response. 1 second after response the fixation spot appeared again and a new trial started.

Results:

Exclusion based on eye data:

DDV: right: 45.8% of trials, left: 68.75%, verbal: 50% of the trials. DDC: right: 22.4% of trials, left: 64.6% of trials, verbal: 55% of the trials.

2A Compare rectangles

Procedure: In the first run, the task of the subject was solely to indicate whether 2 rectangles had the same orientation. The rectangles were either vertical or horizontal. In the second run he also had to indicate whether there were indeed 2 rectangles (and not 1 or no rectangles). In the first run a block consisted of 48 trials, in the second run a block consisted of 40 trials.

In the first run there were 3 location conditions (items around an imaginary center in the left visual field, at the center, or in the right visual field) x 2 similarity conditions (the rectangles were the same or different). In all location conditions on half of the trials the rectangles were the same and the other half they were different. Furthermore, during one block on half of the trials the imaginary center was the actual center of the screen, on 25% of the trials the imaginary center was in the left visual field and on the remaining 25% of the trials the imaginary center was in the right visual field. One block consisted of 48 trials, and conditions were randomly intermixed throughout the block.

In the second run, there was a 'no rectangle' condition, there were 4 rectangle conditions: 1 rectangle to the left of the imaginary center, 1 rectangle to the right of the imaginary center, 2 rectangles with the same orientation or 2 rectangles with different orientations and 3

location conditions: the imaginary center was in the left visual field, at the center of the screen, or in the right visual field. In each block in the second run there were 8 'no rectangle' trials. On the remaining 32 trials, on half of the trials the imaginary center was the center of the screen, on 25% of the trials the imaginary center was in the LVF, and on the remaining 25% of the trials, the imaginary center was in the RVF. Finally, 2/3 of the rectangle trials contained 2 rectangles (on 50% of these trials the rectangles were the same), on 1/6 of the trials one rectangle appeared to the left of the imaginary center, and on the remaining 1/6 of the trials one rectangle appeared to the right of the imaginary center.

Trials were considered correct when he had accurately indicated whether both rectangles had the same orientation (when 2 rectangles were presented) or when he had indicated the right number of rectangles (when less than 2 rectangles were presented).

Stimuli

Sizes:

fixation spot: diameter = 0.49° of visual angle.

long side of a rectangle = 2.55° of visual angle, short side = 1.05° of visual angle.

position

Imaginary center of LVF: 6.88° of visual angle to the left of the center.

Imaginary center of RVF: 6.88° of visual angle to the right of the center.

Distance rectangle to the imaginary center: 3.24° of visual angle.

Vertical position of imaginary center and rectangle center: vertical center of the screen.

Fixation spot: center of the screen

color/luminance

Background: grey: rgb: 80,80,80: (CIE x,y): 0.279, 0.304; luminance: 5.56 cd/m^2 .

color Fixation spot: black: rgb: 0,0,0: (CIE x,y): luminance: 0 cd/m^2 .

color Rectangle: black, rgb: 0,0,0: (CIE x,y): luminance: 0 cd/m^2 .

Experimental trials

During the first run, DDC executed 5 blocks of 48 trials and during the second run he executed 5 blocks of 40 trials. In all blocks he responded verbally. In the first run he had 2 response options "same" or "different". In the second run he had 5 response options: "different", "same", "1 rectangle", "nothing", or "don't know".

Timing

Each trial started with a fixation spot (and an otherwise empty screen). The experimenter checked the patient's fixation and pressed space bar when he was sure that the patient fixated the center. Then the fixation spot remained visible on an otherwise empty screen for 0.745 seconds. Then 0-2 rectangles appeared for 0.12 seconds. This was followed by a fixation spot for 0.75 seconds, after which the subject responded. This was followed by the start of a new trial by a fixation spot on an otherwise empty screen.

Results

Exclusion based on eye data:

first run: 38.3% of trials, second run: 28.5% of trials.

2B Compare rectangles or simple shapes

Procedure: The procedure was the same as for the second run of the compare rectangles task (Exp 1A). So, the subject indicated whether the 2 presented items were the same or different, or when there were less than 2 items, how many items there were. In one experiment he compared oriented rectangles (vertical or horizontal), and indicated whether the rectangles had the same orientation (both horizontal or both vertical); in the second experiment he indicated whether simple shapes (circle, square or triangle) were identical (both circles, squares or triangles) or different.

The subject responded either verbally, with the left hand, or with the right hand. On the experiments where he responded to rectangles, or where he responded to simple shapes with the left hand, the distribution of condition was as follows. On 1/5th of the trials nothing was presented. On 1/5th of the trials the imaginary center was in LVF, 2/5th around the horizontal center of the screen, and 1/5th in RVF. In all location conditions, on 1/4th of the trials 2 similar items were presented, 1/4th two different items were presented, 1/4th one item to the left of the imaginary center, and the remaining 1/4th one item to the right of the imaginary center. Conditions were randomly intermixed throughout the block. During these experiments one block consisted of 72 trials.

When the subject responded verbally or with the right hand to simple shapes the distribution of conditions was as follows. On 1/7th of the trials nothing was presented, 4/14th the imaginary center was in LVF, 4/14th the imaginary center was the horizontal center of the screen, and on the remaining 4/14 of the trials the imaginary center was in RVF. In all location conditions, on 1/4th of the trials 2 similar items were presented, 1/4th two different items were presented, 1/4th one item to the left of the imaginary center, and the remaining 1/4th one item to the right of the imaginary center. Conditions were randomly intermixed throughout the block. During these experiments one block consisted of 84 trials.

He had 5 response options: "different", "same", "1 item", "nothing", or "don't know".

Trials were considered correct when he had accurately indicated whether both items were the same (when 2 items were presented) or when he had indicated the right number of items (when less than 2 items were presented).

Stimuli

Sizes:

fixation spot: diameter = 0.49° of visual angle.

long side of a rectangle = $.55^\circ$ of visual angle, short side = 1.05° of visual angle.

square: 1 side = 1.38° of visual angle.

circle: diameter = 1.87° of visual angle.

triangle: height = 2.23° of visual angle, width = 2.55° of visual angle.

position

Imaginary center of LVF: 6.88° of visual angle to the left of the center.

Imaginary center of RVF: 6.88° of visual angle to the right of the center.
Distance item to the imaginary center: 3.44° of visual angle.
Vertical position of imaginary center and rectangle center: vertical center of the screen.
Fixation spot: center of the screen

color/luminance

Background: grey: rgb: 80,80,80: (CIE x,y): 0.279, 0.304; luminance: 5.56 cd/m².
color Fixation spot: black: rgb: 0,0,0: (CIE x,y): luminance: 0 cd/m².
color Item: black, rgb: 0,0,0: (CIE x,y): luminance: 0 cd/m².

Experimental trials

Responding solely with the left hand, DDC executed 3 blocks of 72 trials with rectangles as stimuli and 2 blocks of 72 trials and 1 block of 43 trials with basic shapes (circles, squares and triangles) as stimuli. Responding solely with the right hand, DDC executed 3 blocks of 72 trials with rectangles as stimuli and 2 blocks of 84 trials with basic shapes (circles, squares and triangles) as stimuli. Responding solely verbally, DDC executed 3 blocks of 72 trials with rectangles as stimuli and 3 blocks of 84 trials with basic shapes (circles, squares and triangles) as stimuli. He had 5 response options: "different", "same", "1 rectangle", "nothing", or "don't know".

Timing

Each trial started with a fixation spot (and an otherwise empty screen). The experimenter checked the patient's fixation and pressed space bar when he was sure that the patient fixated the center. Then the fixation spot remained visible on an otherwise empty screen for 0.745 seconds. Then 0-2 rectangles appeared for 0.12 seconds. This was followed by a fixation spot for 0.75 seconds, after which the subject responded. Following the response, the selected option was highlighted for 0.5 seconds. This was followed by the start of a new trial by a fixation spot on an otherwise empty screen. He only received feedback on his overall accuracy at the end of the block.

Results:

Exclusion based on eye data:

left hand: 8.44% of trials, right hand: 16.9% of trials, verbally: 15% of trials.

2C Compare pictures

Procedure: 2 images were presented, either 2 foxes, or 2 tanks, or 1 fox and 1 tank. His task is simply to indicate whether both presented images are the same or different. The images appear around an imaginary center in LVF, around the center of the screen, or around an imaginary center in RVF.

The subject responded either with the left hand, or with the right hand. He pointed to a text box containing either the word "same" or "different" (there were two response options). The subject only received feedback about his performance at the end of the block. Each block consisted of 48 trials. There were 3 location conditions (LVF, center or RVF) x 2 similarity conditions (same or different). All 6 conditions appeared equally often during a

block. The trials were randomly intermixed throughout the block. For each response mode he performed 2 blocks of 48 trials. Due to the loss of one eye tracking file, data of one of the 2 blocks where he responded with the right hand had to be excluded from the final analysis (although note that the pattern of results during this block was similar to the patterns of result when eye tracker data was available and he fixated correctly).

Stimuli

Sizes:

fixation spot: diameter = 0.43° of visual angle
width and height picture: 7.36° of visual angle

position

Imaginary center of LVF: 13.8° of visual angle to the left of the center.
Imaginary center of RVF: 13.8° of visual angle to the right of the center.
Distance item to the imaginary center: 6.44° of visual angle
Vertical position of imaginary center and rectangle center: vertical center of the screen.
Fixation spot: center of the screen

color/luminance

Background: grey: rgb: 80,80,80: (CIE x,y): 0.279, 0.304; luminance: 5.56 cd/m^2 .
color Fixation spot: black: rgb: 0,0,0: (CIE x,y): luminance: 0 cd/m^2 .

Timing

Each trial started with a fixation spot (and an otherwise empty screen). The experimenter checked the patient's fixation and pressed space bar when he was sure that the patient fixated the center. Then the fixation spot visible on an otherwise empty screen for 1/30th to 1/3d of a second. Then the images appeared for 0.12 seconds. This was followed by a fixation spot for 0.75 seconds, after which the subject responded. Following the response, the selected option was highlighted for 0.5 seconds. This was followed by the start of a new trial by a fixation spot on an otherwise empty screen. He only received feedback on his overall accuracy at the end of the block.

Results:

Exclusion based on eye data:

1 block of 48 trials where he responded with the right hand was entirely discarded because of a missing eye tracker data file. Furthermore the following percentage of trials was excluded because of wrong eye movements or missing data.
left hand: 4.17% of trials, right hand: 2.08% of trials.

3A Label Pictures

Procedure: 1 image (of a fox or a tank) appears briefly in LVF or RVF. Then he chooses from three response options by pointing to a box containing the word "fox", "tank", or "don't know", or by verbally saying one of those words, to indicate which image he thinks was just presented. He responded with the left hand, the right hand or verbally. There were

4 conditions (occurring equally often and randomly intermixed), the image could appear in LVF or RVF; the image was a fox or a tank. For each response mode he executed 2 blocks of 40 trials.

Stimuli

Sizes:

fixation spot: diameter = 0.43° of visual angle
width and height picture: 7.36° of visual angle

position

Imaginary center of LVF: 6.44° of visual angle to the left of the center.
Imaginary center of RVF: 6.44° of visual angle to the right of the center.
Vertical position of imaginary center and rectangle center: vertical center of the screen.
Fixation spot: center of the screen

color/luminance

Background: grey: rgb: 80,80,80: (CIE x,y): 0.279, 0.304; luminance: 5.56 cd/m².
color Fixation spot: black: rgb: 0,0,0: (CIE x,y): luminance: 0 cd/m².

Timing

Each trial started with a fixation spot (and an otherwise empty screen). The experimenter checked the patient's fixation and pressed space bar when he was sure that the patient fixated the center. Then the fixation spot remained visible on an otherwise empty screen for 1/30th to 1/3d of a second. Then the image appeared for 0.12 seconds. This was followed by a fixation spot for 0.75 seconds, after which the subject responded. Following the response, the selected option was highlighted for 0.5 seconds. This was followed by the start of a new trial by a fixation spot on an otherwise empty screen. He only received feedback on his overall accuracy at the end of the block.

Results:

Exclusion based on eye data:

left hand: 5% of trials, right hand: 3.8% of trials, verbally: 1.25% of trials.

3B Match pictures

Procedure: 1 image (of a fox or a tank) appears briefly in LVF or RVF. Subsequently the subject chooses from two images, which image was initially presented. The subject responded with the left hand, the right hand or verbally. When he responds manually, he points to the correct picture, when he responds verbally he says left or right. During a block there were 4 conditions (occurring equally often and randomly intermixed), the image could appear in LVF or RVF; the image was a fox or a tank. Independent of the condition the order of the response images was randomly determined per trial (i.e. the fox could be on the left and the tank on the right, or vice versa).

For each response mode DDC executed 2 blocks of 40 trials.

Stimuli

Sizes:

fixation spot: diameter = 0.43° of visual angle

width and height picture: 7.36° of visual angle

position

Imaginary center of LVF: 6.44° of visual angle to the left of the center.

Imaginary center of RVF: 6.44° of visual angle to the right of the center.

Vertical position of imaginary center and rectangle center: vertical center of the screen.

Fixation spot: center of the screen

color/luminance

Background: grey: rgb: 80,80,80: (CIE x,y): 0.279, 0.304; luminance: 5.56 cd/m^2 .

color Fixation spot: black: rgb: 0,0,0: (CIE x,y): luminance: 0 cd/m^2 .

Timing

Each trial started with a fixation spot (and an otherwise empty screen). The experimenter checked the patient's fixation and pressed space bar when he was sure that the patient fixated the center. Then the fixation spot remained visible on an otherwise empty screen for $1/30^{\text{th}}$ to $1/3^{\text{d}}$ of a second. Then the image appeared for 0.12 seconds. This was followed by a fixation spot for 1.25 seconds, after which the subject responded. Following the response, the selected option was highlighted for 0.5 seconds. This was followed by the start of a new trial by a fixation spot on an otherwise empty screen. He only received feedback on his overall accuracy at the end of the block.

Results:

Exclusion based on eye data:

left hand: 7.5% of trials, right hand: 2.5% of trials, verbally: 5% of trials.

4A Match shapes

Procedure: Either nothing appears, or a simple shape (circle, square or diamond) appears in one of four locations (far left, close left, close right, far right). Then the subject chooses from four options: either a box containing the word "nothing", or a depiction of one of the three shapes (he points to one of these boxes). After that he indicates how confident he is of his judgment on a scale from 1 - 4 (guess - certain) by pointing at one of four boxes containing the numbers 1 to 4 (from left to right). Images, which image was just presented. He responded with the left hand, the right hand or verbally. He only received feedback at his percentage correct on average at the end of each block. Each block consisted of 35 trials. On 5 trials nothing appeared, on 5 trials the item appeared on the far left position, 10 trials the close left position, 10 trials the close right position, and 5 trials the far right position. When an item appeared its identity was randomly determined to be a circle, a square or a triangle. The trials were randomly intermixed throughout the block. For each response mode he performed 3 blocks of 35 trials.

Stimuli

Sizes:

fixation spot: diameter = 0.43° of visual angle

square: 1 side = 5.15° of visual angle

circle: diameter = 5.81° of visual angle

triangle: height = 4.77° of visual angle, width = 5.52° of visual angle

position

Imaginary center of far left and far right: 16.6° of visual angle to the left/right of the horizontal center of the screen.

Imaginary center of close left and close right: 5.52° of visual angle to the left/right of the horizontal center of the screen.

Vertical position of imaginary center and rectangle center: vertical center of the screen.

Fixation spot: center of the screen

color/luminance

Background: grey: rgb: 80,80,80: (CIE x,y): 0.279, 0.304; luminance: 5.56 cd/m^2 .

color Fixation spot: black: rgb: 0,0,0: (CIE x,y): luminance: 0 cd/m^2 .

Color of shape: black: rgb: 0,0,0: (CIE x,y): luminance: 0 cd/m^2 .

Timing

Each trial started with a fixation spot (and an otherwise empty screen). The experimenter checked the patient's fixation and pressed space bar when he was sure that the patient fixated the center. Then the fixation spot remained visible on an otherwise empty screen for $1/30^{\text{th}}$ to $1/3^{\text{d}}$ of a second. Then either nothing appeared or a simple shape appeared for 0.12 seconds. This was followed by a fixation spot for 0.75 seconds, after which the subject responded, by pointing to a text box with the word "nothing", or by pointing to a depiction to one of the simple shapes. Following the response, the selected option was highlighted for 0.5 seconds. Then he indicated his confidence in his judgment (on a scale from 1-4: guess - certain). This was followed by the start of a new trial by a fixation spot on an otherwise empty screen. The subject only received feedback on his overall accuracy at the end of the block.

Results:

Exclusion based on eye data:

left hand: 7.62% of trials, right hand: 6.67% of trials.

4B Orientation same/diff

Procedure: A rectangle, randomly oriented, appeared in LVF or RVF. After a blank interval a second rectangle appeared at the same location with the same orientation, or a 30° , 60° , or 90° change in orientation. The subject indicated whether there was a change, and if so how large (on a continuous scale from 0-100, for manual responses he pointed to a location on a ruler running from 0-100). After he gave his orientation judgment, he indicated how

certain he was of his judgment (on a scale from 1-5, 1: complete guess, 5: completely certain). Each block consisted of 36 trials. On 3/9th of the trials there was no change in orientation, all the other possible changes (small, medium and large) occurred on 2/9th of the trials. On half of the trials, rectangles were presented with a small luminance difference and the other half with a large luminance difference (equally distributed across conditions). The trials were randomly intermixed throughout the block. The subject executed 2 blocks where he responded solely with the left hand, 2 blocks where he responded solely with the right hand, and 5 blocks where he responded solely verbally. If he indicated no change on a no change trial, it was considered to be correct. If his indicated change was within 30 degrees of the actual orientation change, it was considered to be correct (his response on a scale from 0-100 was first converted into a change of degrees on a scale from 0-90).

Stimuli

Sizes:

fixation spot: diameter = 0.49° of visual angle

long side of a rectangle = 2.95° of visual angle, short side = 1.18° of visual angle.

position

Imaginary center of LVF: 7.86° of visual angle to the left of the center.

Imaginary center of RVF: 7.86° of visual angle to the right of the center.

Vertical position of rectangle center: vertical center of the screen.

Fixation spot: center of the screen

Item: Y-center: middle of the screen, X-center: 240 pixels ($=7.86^\circ$ of visual angle) to the left or right of the center of the screen, or at the center of the screen.

color/luminance

Background: grey: rgb: 90,90,90: (CIE x,y): 0.28, 0.306; luminance: 7.12 cd/m^2 .

color Fixation spot: white: rgb: 255,255,255: (CIE x,y): 0.289, 0.317; luminance: 63.2 cd/m^2 .

color Rectangle, small luminance difference: grey, rgb: 145,145,145: (CIE x,y): 0.284, 0.311; luminance: 19.3 cd/m^2 .

color Rectangle, large luminance difference: grey, rgb: 145,145,145: (CIE x,y): 0.286, 0.311; luminance: 34.1 cd/m^2 .

Experimental trials

DDC executed 2 blocks of 36 trials where he responded solely with the left hand, 2 blocks of 36 trials where he responded solely with the right hand, and 5 blocks of 36 trials and 1 block of 7 trials where he responded solely verbally.

He indicated whether the rectangle had changed orientation, and if so how much (on scale from 0-100). He then indicated how certain he was of his judgment on a scale from 1-5 (1: guess, 5: certain).

Timing

Each trial started with a fixation spot (and an otherwise empty screen). The experimenter checked the patient's fixation and pressed space bar when he was sure that the patient

fixated the center. Then the fixation spot remained visible on an otherwise empty screen for 1/30th - 1/3d of a second. Then 1 rectangle appeared for 100 milliseconds. Then only the fixation spot was visible on an otherwise empty screen for 1 seconds. Then the second rectangle appeared at the same location as the first rectangle until the subject responded. After he indicated no change, or a size of the change he received feedback about his choice (i.e. following the response, the selected option was highlighted for 0.5 seconds). Then 5 rectangles with numbers in it appeared, and he pointed to one of them or verbally indicated his confidence, again followed by feedback about his choice (i.e. after response the selected option was highlighted for 0.5 seconds). Only at the end of the block, but not at the end of the trial, he received feedback about his overall percentage correct.

Results:

Exclusion based on eye data:

left hand: 25% of trials, right hand: 15.3% of trials, verbally: 13.9% of trials.

5 Detect objects

Procedure: On 20% of the trials nothing appeared, on the other 80% one of four possible items (a circle or a square, which was bright green or dim green, the identity of the item was randomly selected) appeared anywhere on the screen. The subject indicated whether an item had appeared and if so where (by pointing to a location or verbally indicating a location when he thought an item had appeared, and by pointing to, or verbally indicating a box containing the word "absent"). Followed by him indicating 2 confidences: first how confident he was about his presence/absence judgment, then how confident he was about the localisation of the item. If the patient indicated that he thought that not item had appeared, but one had in fact appeared, he had to guess the location of the presented item. There were 3 different runs for the subject; in one run he only responded with his left hand, in one run only with his right hand, and in one run he only responded verbally. Trials were considered correct when he had accurately indicated that an item had been presented, or when he had accurately indicated that no item had been presented. Trials where no item was presented, but he indicated that an item had been present were labelled as false alarms.

Stimuli

Sizes:

fixation spot: diameter = 0.49° of visual angle

bright and dim green circle: radius = 0.69° of visual angle

width and height of the square: 1.38° of visual angle

position

Fixation spot: center of the screen

Item: X-center could be anywhere from 1/6th of the width of the screen to 5/6th of the width of the screen, y-center could be anywhere from 1/6th of the height of the screen to 5/6th of the height of the screen. Furthermore, the x-value was at least 3.28° away from the horizontal center of the screen.

color/luminance

Background: red: rgb: 255,0,0: (CIE x,y): 0.641, 0.341; luminance: 11.95 cd/m².

color Fixation spot: green: rgb: 0,255,0: (CIE x,y): 0.293, 0.606; luminance: 44.7 cd/m².

color 1 item: bright green, rgb: 0,255,0: (CIE x,y): 0.293, 0.606; luminance: 44.7 cd/m².

color 2 item: dim green, rgb: 0,136,0: (CIE x,y): 0.293, 0.606; luminance: 11.95 cd/m².

Experimental trials

1 block consisted of 34 trials.

DDC executed 2 blocks of 34 trials in each response mode (right hand, left hand, verbally).

Timing

Each trial started with a fixation spot (and an otherwise empty screen). The experimenter checked the patient's fixation and pressed space bar when he was sure that the patient fixated the center. Then the fixation spot remained visible on an otherwise empty screen for a randomly chosen period of 1-3 seconds. Then an item appeared on 80% of the trials for 0.15 seconds. This was followed by a fixation spot on an otherwise empty screen for 1 second, followed by a screen where he indicated his confidence (1-5: guess to completely certain) by pointing to one of the five boxes containing the numbers 1 to 5, or by verbally indicating his confidence. This was followed by feedback lasting 0.5 seconds, in which his selected response was highlighted. The subject indicated his confidence twice, first about his presence/absence judgment, then (if applicable) about his location judgment. At the end of the trial the subject received feedback on the accuracy of his presence/absence response (for 0.5 seconds). This final feedback was followed by the start of a new trial (i.e. a fixation spot appeared on an otherwise empty screen).

Results:

Exclusion based on eye data:

right: 17.6% of trials, left: 19.1% of trials, verbal: 17.6% of the trials.

Supplemental Experiment: Indicate color

Procedure: A colored circle (red or blue) appeared to the left of fixation, to the right of fixation or at fixation. The subject indicated whether the colored circle was red or blue. Furthermore, he was instructed to respond as quickly and accurately as possible. The circle was equally likely to appear at one of the three possible locations, and per location the circle was equally likely to be blue or red. There were two different sessions, in one the subject only responded with the index and middle finger of the left hand, in the other he responded with the index and middle finger of the right hand. Trials on which the subject did not appropriately fixate the center were excluded from the analysis. Furthermore, trials on which the subject took more than 5 seconds to respond were also excluded from the analysis. Finally, mean reaction times were calculated as the average response time for correct trials.

Stimuli

Sizes:

fixation spot: diameter = 0.49° of visual angle
circle: radius = 2.2° of visual angle

position

Fixation spot: center of the screen

Imaginary center of circle to the left of fixation: 5.48° of visual angle to the left of the center.

Imaginary center of circle to the right of fixation: 5.48° of visual angle to the right of the center.

color/luminance

Background: black: rgb: 0,0,0; luminance: 0 cd/m².

color Fixation spot: white: rgb: 255,255,255: (CIE x,y): 0.289, 0.317; luminance: 63.2 cd/m².

Circle color 1: red, rgb: 250,0,0: (CIE x,y): 0.641, 0.341; luminance: 11.5 cd/m².

Circle color 2: blue, rgb: 0,0,250: (CIE x,y): 0.148, 0.072; luminance: 6.2 cd/m².

Experimental trials

1 block consisted of 36 trials.

DDC executed 1 block of 4, 1 block of 12 and 3 blocks of 36 trials with the left hand, and 3 blocks of 36 trials with the right hand.

Timing

Each trial started with a fixation spot (and an otherwise empty screen). The experimenter checked the patient's fixation and pressed space bar when he was sure that the patient fixated the center. Then the fixation spot remained visible on an otherwise empty screen for a randomly chosen period of 1-3 seconds. Then a colored circle appeared for 0.1 seconds. This was followed by a fixation spot on an otherwise empty screen. The trial ended when the subject indicated the color of the circle by pressing "z" for red circles or "x" for blue circles when he responded with the left hand, and "n" for red circles and "m" for blue circles when he responded with the right hand. After his response, a new trial started with a fixation spot on an otherwise empty screen.

Results:

Exclusion based on eye data:

right: 13% of trials, left: 11.3% of trials.

Exclusion based on responding too slow:

right: 0.9% of trials, left: 2.4% of trials.

Overview results

	Left Hand		Right Hand		Verbal	
	LVF	RVF	LVF	RVF	LVF	RVF
1: Detect circles - DDV						
Acc	100%	100%	100%	100%	100%	100%
Distance (° visual angle)	2.13	1.09	2.84	1.18	3.85	5.44
False alarm	0%		0%		0%	
1: Detect circles - DDC						
Acc	100%	100%	91.2%	94.1%	100%	100%
Distance	3.83	6.2	2.42	3.28	5.37	5.75
False	0%		7.7%		15.5%	
2A: Compare Rectangles						
Acc					100%	98.2%
Acc center					53.8%	
2B: Compare rectangles and simple shapes						
Acc	97.5%	85.4%	85%	84.2%	97.7%	98%
Acc center	56%		50.8%		58.6%	
2C: Compare pictures						
acc	96.8%	72.4%	100%	68.8%		
acc center	53.1%		60%			
3A: Label pictures						
acc	71.1%	89.5%	64.1%	86.8%	85%	100%
3B: Match pictures						
acc	94.4%	68.4%	97.4%	74.4%	94.7%	76.3%

	Left Hand		Right Hand		Verbal	
	LVF	RVF	LVF	RVF	LVF	RVF
4A: Match shapes - all trials						
acc	90%	45.2%	87.5%	40.9%		
acc no objects	86.7%		92.3%			
4A: Match shapes - high confidence						
acc	100%	60%	100%	65%		
acc no objects	100%		100%			
4B: Orientation same/diff - all trials						
Acc	96.3%	66.7%	90%	83.9%	85.7%	70.2%
Degree difference	8.8	13.5	11.2	11.4	11.5	14.7
4B: Orientation same/diff - high confidence trials						
Acc	100%	91%	92.3%	100%	95%	75%
Degree difference	6.5	12.5	3.95	6	8.2	15
5: Detect objects - all trials						
Acc	100%	100%	100%	95.5%	100%	100%
Distance	3.08	2.48	2.94	2.41	3.96	2.25
FA	0%		11.1%		0%	
5: Detect objects - high confidence trials						
Acc	100%	100%	100%	94.1%	100%	100%
Distance	2.35	1.81	2.4	1.93	3.52	1.74
FA	0%		0%		0%	
Supp Exp: Indicate colors						
Acc	94.3%	91.4%	85.3%	100%		
RT (milliseconds)	1152	1088	1383	1467		

Statistical Results

All results are based on permutation testing. P-values indicate how likely it is that observed performance exceeds chance performance. If there is no main effect of visual field then the data for both visual fields is combined and the result of the test is put in the most leftward entry. Similarly, if there is no interaction between response mode and visual field, the data is combined and the result of the statistical test is printed in the most leftward entry.

	Left Hand		Right Hand		Verbal	
	LVF	RVF	LVF	RVF	LVF	RVF
1: Detect circles - DDV						
Acc	p<.00001					
Distance	p<.00001					
Visual Field, LVF vs RVF (acc)	p=1					
Visual Field, LVF vs RVF (distance)	p=.18					
Response type x visual field (acc)	p=1					
Response type x visual field (distance)	p=.75					
1: Detect circles - DDC						
Acc	p<.00001					
Distance	p<.00001					
Visual Field, LVF vs RVF (acc)	p=1					
Visual Field, LVF vs RVF (distance)	p=.41					
Response type x visual field (acc)	p=.74					
Response type x visual field (distance)	p=.55					
2A: Compare Rectangles						
Acc					p<.00001	
Acc center					p=.28	
Visual Field, LVF vs RVF (acc)					p=1	
2B: Compare Rectangles and						

Simple Shapes						
Acc	p<.00001					
Acc center	p=.6					
Visual Field, LVF vs RVF (acc)	p=.29					
Response type x visual field (acc)	p=.12					
2C: Compare pictures						
acc	p<.00001	p=.00088				
acc center	p=.34					
Visual Field, LVF vs RVF	p=.00025					
Response type x visual field	p=.7					
3A: Label pictures						
acc	p<.00001	p<.00001				
Visual Field, LVF vs RVF	p=.00016					
Response type x visual field	p=.81					
3B: Match pictures						
acc	p<.00001	p<.00001				
Visual Field, LVF vs RVF	p<.00001					
Response type x visual field	p=.79					
Task (match or label) x visual field (LVF or RVF)	p<.00001					
4A: Match shapes						
acc	p<.00001	p=.0075				
no objects	p<.00001					
Visual Field, LVF vs RVF	p<.00001					
Response type x visual field	p=.98					
4A: Match shapes - high confidence						

acc	p<.00001	p=.0008				
no objects	p<.00001					
Visual Field, LVF vs RVF	p=.00003					
Response type x visual field	p=.83					
high vs low confidence	p=.00004					
4B: Orientation same/diff - all trials						
Acc	p<.00001	p=.00014				
Degree difference	p<.00001					
Visual Field, LVF vs RVF (acc)	p=.001					
Visual Field, LVF vs RVF (degree)	p=.12					
Response type x visual field (acc)	p=.11					
Response type x visual field (degree)	p=.38					
4B: Orientation same/diff - high confidence						
Acc	p<.00001					
Degree difference	p<.00001	p<.00001				
Visual Field, LVF vs RVF (acc)	p=.13					
Visual Field, LVF vs RVF (degree)	p=.033					
Response type x visual field (acc)	p=.49					
Response type x visual field (degree)	p=.63					
high vs low confidence (acc)	p=.0038					
high vs low confidence (degree)	p=.0032					
5: Detect objects - all trials						

Acc	p<.00001					
Distance	p<.00001	p<.00001				
Visual Field, LVF vs RVF (acc)	p=1					
Visual Field, LVF vs RVF (distance)	p=.023					
Response type x visual field (acc)	p=1					
Response type x visual field (distance)	p=.97					
5: Detect objects - high confidence trials						
Acc	p<.00001					
Distance	p<.00001	p<.00001				
Visual Field, LVF vs RVF (acc)	p=1					
Visual Field, LVF vs RVF (distance)	p=.036					
Response type x visual field (acc)	p=1					
Response type x visual field (distance)	p=.95					
high vs low confidence (distance)	p=.0024					
Supp Experiment: Indicate colors						
Acc	p<.00001					
Response type x visual field (acc)	p=.55					
Response type x visual field (RT)	p=.13					

Phenomenal reports

DDV:

Question 1: "When you fixate on a point, do you feel that you see both to the left and the right of the point, or are you blind to one side of the point? - Is this the same now as before your operation, or has it changed since your operation?"

Answer: I see well, except for the peripheral angles, which appear blurred. This disturbance was not present before the operation.

Question 2: "Do you feel your whole body, or only half of your body? - Again is this the same now as before your operation, or has it changed since your operation?"

Answer: Yes, I do feel all my body, but the perception of left side, in particular arm and leg, is sometimes less clear. This did not happen before the operation.

Question 3: "Do you have the sense that you control your whole body or only half of your body? - Again is this the same now as before your operation, or has it changed since your operation?"

Answer: Yes, I can control my whole body, exactly in the same way as before the operation.

Question 4: "Finally, do you feel normal, like you are just one person in your body and brain, or do you sometimes feel like there is another presence? - And again is this the same now as before your operation, or has it changed since your operation?"

Answer: I feel absolutely normal, as before the operation.

DDC:

Question 1: "When you fixate on a point, do you feel that you see both to the left and the right of the point, or are you blind to one side of the point? - Is this the same now as before your operation, or has it changed since your operation?"

Answer: I had a visit from the optician a while ago. Anyways I see well on both sides. It's the same before and after [referring to the operation].

Question 2: "Do you feel your whole body, or only half of your body? - Again is this the same now as before your operation, or has it changed since your operation?"

Answer: Before [the operation] I often had less sensitivity on the right arm. Afterwards, it's normal and only sometimes less sensitive.

Question 3: "Do you have the sense that you control your whole body or only half of your body? - Again is this the same now as before your operation, or has it changed since your operation?"

Answer: The left side has less control. Specifically the hand. This has always been like that [no change before or after the operation].

Question 4: "Finally, do you feel normal, like you are just one person in your body and brain, or do you sometimes feel like there is another presence? - And again is this the same now as before your operation, or has it changed since your operation?"

Answer: No, that absolutely not [referring to another presence]. Sometimes I think myself that the right arm did an involuntary, reflexive, movement (referring to after the operation).

Extensive interview of DDC
Translated by D.A. Neville
26-09-2016

Exp = Experimenter, D = DDC

#Interview time: 11:10

Exp.

Tell two main places in Torino that I know very little of it myself. Tell me two big reference points [landmarks] you know in Torino. For example a square.

D.

Near the center?

Exp.

Wherever you prefer. Picture Torino landscape and tell me two main landmarks you know close to center then.

D.

Ehh, in Torino central there is, ehh, and it depends where [smiles].

Exp.

[smiles] ok then pick the ones you prefer.

D.

There is piazza Castello, where there is the horse. Have you ever seen it?

Exp.

I think I remember it. OK, let's focus on piazza Castello with the horse. Is the horse at the center of the piazza?

D.

Yes.

Exp.

OK, good. Now pick the other reference point [landmark].

D.

I could pick, hoping it doesn't ...[mumble], eh Castello di Stupinigi

Exp.

OK then we have the piazza Castello and how is it called again the castle?

D.

Castello di Stupinigi.

Exp.

Now I want you to picture yourself in piazza Castello, with the horse at your back, and your start walking towards Castello Stupinigi. [D. nods].

D.

It's quite a walk.

Exp.

hehe indeed, ok so you walk at your own speed, and while you are walking I'd like you to describe what you see around you.

You know picture your back against the horse and you start walking. So what are the first things you would see once you start walking?

D.

First, lots of cars. Second the smog, and third the 'sickness' for sure. That is guaranteed.

Exp.

Ok are there any specific places along the way like bars, cinema that you remember?

D.

Well then you would have to go outside Torino. Torino I don't know it much [NOT SURE].

Exp.

Ok outside Torino where would you go?

D.

Ah then I would to Orbassano, where I live.

Exp.

Orbassano, ok.[D. repeats Orbassano to Exp.].

So then you are leaving from the city of Torino to go to Orbassano, as usual picture yourself with the city of Torino behind, and picture that you are driving a car with open cockpit [i.e. a cabrio].

D.

Oh with open cockpit, so if it rains we get all wet.

Exp.

Tell me what you see around you. Let's start, what do you see in front of you in the distance.

D.

I see the road, lots of buildings, the noise,[could not understand maybe 'rumore'] Hospitals, the area of Torino, then outside the city the castello di Stupinigi,

Exp.

When you exit the road, where do you find the castello of Stupinigi?

D.

Ehm, if arrive... if I exit Torino, it's on a part of Torino, it's not that I am going to Torino, it's outside Torino

Exp.

Yes,

D.

It depends where I arrive from. It depends on the village I arrive from. If I come from Rivo[couldn't understand village name] it's on the right. Instead on left is from Orbassano.

Exp.

Ok let's do this. Following the roads when coming out of Torino, which road exits do you encounter on the way? Tell me which road exits you have.

D.

Ok then I find...

Exp.

In order if you can, and on which side, of course if you know the way by car.

D.

Eh boom, I don't know Torino that well, I don't go there often.

Exp.

Just tell me the ones you remember when exiting the city.

D.

I remember, the hospital for sure.

Exp.

Where do you find the hospital?

D.

[couldn't understand] they are all in Torino [not sure] and one in Orbassano.

Exp.

Ok.

D.

San Luigi.

Exp.

Ok a place of reference for where the hospital is located?

D.

[Coughs]

Exp.

We were saying, if I arrive to Orbassano, how can I find the hospital.

D.

Ok if you arrive in Orbassano, ehyyy, you can take immediately, ehyy, besides [...] the Tangenziale, you do all the part of the..., you do all the part of Orbassano, afterwards, you do two or three roundabouts, but it's a mess, you don't understand anything anymore, [...] and I don't have the driving license. But in theory it's always the one on the right to go but sometimes also the one on the left goes. No no it's anyways the same.[...] No I don't like it.[talks a few more minutes about something else].

Exp.

Ah! Ok, picture yourself now instead of being in Orbassano, I have never been to Orbassano,

D.

I only live there,

Exp.

ehh no but I suppose there is a main square there in Orbassano.

D.

Yes, ok.

Exp.

Now picture yourself walking from the square of Orbassano to your home.

D.

yes.

Exp.

And now, since this is your place, tell me what you see around you. Bar, restaurants,

D.

Yes, so if I start from the main square, right in the square, I see the city hall,

Exp.

Where is it located?

D.

At the center.

Exp.

So if I am walking from the square of Orbassano I find it right in front of me.

D.

No no.

This is the square of Orbassano. And here [pointing with the left arm to the left] there is the city hall.

Exp.

OK.

D.

City hall, the square, [picture the locations using both hands], and here there is a bar[points to the right using the right arm].

Exp.

Ok.

D.

Then here there is another [points left with right arm].And also right on the other side there is another bar. [mumbles].

Exp.

Ok now we are walking in between the two bars. Following the same road in the same direction, what do you see?

D.

You see lots of banks, everywhere also in Orbassano. Then there is nothing to be done...people without money..bho I don't know [couldn't understand].

Exp.

Ok let's not go into that.

D.

Keep mumbling.

Exp.

The postoffice for example where is located?

D.

The postoffice is all on another location.

Exp.

So if you were in-between the two bars, to go to the postoffice what would you have to do?

D.

Then you would have to basically,ehhhh, I go to shorten the way,

Exp.

Describe to me exactly as if you were there like 'I turn around on my left, I keep going straight and then I turn right'

D.

Then, I pass basically, I am at the center of Orbassano at the square, then from the piazza I go pass thought the city hall, therefore I go to the part where there is Calimo Giovanni [NOT SURE] which is an 'oratorio', which is always part of the church, practically there is city hall, the church, and behind there is the oratorio which is always part of the religious group [i.e. parrocchia].

Then I arrive close the ASL [national worker association],

Exp.

Which in comparison to the oratorio is located where?

D.

Very close by, next to it.

Exp.

OK.

D.

This is practically the oratorio and the part behind the ASL. [19:20]

On the other side there was once the heart of Orbassano, many years ago. Via Roma. And now they made it up until our home. There it will always remain the center. But in reality the center is what passes in front of us.

Ok so given that is the center, I am on via Roma, there are shops, banks, bar, there is everything there.

Exp.

Ok, then tell me while standing at the centre of Via Roma, one place you have on your left and one place you have on your right.

D.

Then there you find lots of banks. Shops of all different types. Clothing, children,

Exp.

Do you remember any one of them in particular?

D.

Of what?

Exp.

Of any kind of shop. I mean if you can remember if you entered in any of them or if you can picture them.

D.

Yes, unfortunately Paleshi [or Panetti].

Exp.

Ok, picture yourself standing in front of this shop. What's on the left side of the shop?

D.

Hmm, for sure there are, on the left and on the right, once there was pizzeria al taglio, then they opened up something like a restaurant, small but handy, quite,

Exp.

So on the left of the shop what's there. The most recent one.

D.

Next to this shop these are the ones. Either the bar 'Da Benito', since they have been there forever, he is full of money,
[digresses on the owner of the Bar]

Exp.

So instead on the right side of the shop. What's there.

D.

Basically there is, ehm.. I arrive up, there is a crossway,

Exp.

So from the shop?

D.

So from the shop I do 100 meters, and I have the crossway among traffic lights to go from one side to the other. I can either do the way like this [does hand gesture], and I go towards the post office, or the way like this [does hand gesture], and of course I go towards the part which is all on the opposite side to where I live.

Exp.

Ok so if I am at this roundabout, and if I understood you correctly, If I am at this roundabout and I go straight, I go...

D.

Where there is the post office.

Exp.

Right. If I go left?

D.

If you go left you go at the beginning of Orbassano.

Exp.

Ok, if I go right?

D.

On the right instead you come to my home.

Exp.

OK, so from your home, if I come from your home, and I come to the roundabout, on the right I find?

D.

You find basically the post office, and on the other side, there is a pizzeria

Exp.

If I go to the left

D.

Yes, yes. There is the pizzeria, the jeweller, watches, necklaces all this kind of things.

Exp.

Ok I think I understand. I am at the roundabout, if I go left of it I find myself at the beginning of via Roma? At some point?

D.

Yes.

Exp.

Ok. Coming from that direction, the beginning of via Roma, tell me one place you remember on your right.

D.

So on your right, there is 'Succio'

Exp.

Succio?

D.

Yea yeah, it's called like that. [digresses on the pizzeria owner who never made receipts]

Exp.

Ok so on the right you told me there is the pizzeria and on the left?

D.

There is the Bar Benito.

Ok for this first part we are done.

END INTERVIEW 1 24:28

[keep talking for a while about Orbassano locations]

INTERVIEW 2 25:20

Exp.

Hmm, ok let me explain. When I ask you something, please evaluate your feeling/emotions before and after the operation.

For any of the questions I ask, you are free to not answer if you want and it remains only among the two of us.

D.

Which operation?

Exp.

You told you suffered from Epileptic seizures.

D.

Yes. From birth.

Exp.

But then at some point they went away. They cured you.

D.

Yes, it worked.

Exp.

Ok, for example in terms of sight, did you notice any difference? Between when you used to have the attacks and when you didn't have them anymore?

D.

Yes, first of all I got lucky since I got the big shots the last year they were around. I was 18 and I decided to do it. Otherwise I wouldn't have done them. Honestly. [digresses on how bad health system can be and his story with the operation].

Exp. [27:25]

Anyways in terms of eye sight, did you notice any difference between when you had the attacks and now that they are gone?

D.

ehh the difference is minimal. Before I notice it. People told me, you had the seizure, especially while sleeping, something that happens stil now but now [mumbles] I sometimes notice it sometimes not. Let's do 50/50. For the rest I manage to stand straight more than before. Before I had a seizure and would collapse to the ground, now I don't have a normal equilibrium but thanks to go I don't complain. [mumbles and digresses].

Exp.

Ok in terms of control, arm movements. Did you notice any differences?

D.

Yes. On the left arm there are differences with the right arm.

Exp.

Which ones?

D.

Differences in grip, in the sensitivity at touch,

Exp.

More precise or less precise?

D.

The left part is less precise, the right one instead is more precise. So if you blind fold me, and give me something in my right hand I can recognise it immediately, for example a spoon, by touching it blind. I can of course be wrong sometimes. On the left hand instead, I find it much harder. This is what I have noticed. I am not sure if it's my impression but I have less sensitivity. Or at least this is how I feel.

Exp.

OK. Are there any other things you noticed?

D.

Other things..sometimes [mubmles] Let's make an example. Over one month after the operation I used to get 3 attacks, and I have one month during which I had none and then suddenly 4.

For this reason I am not alone but I live with my parents.

Exp.

Did you notice any difference in terms of hearing? After the operation between one side and the other.

D.

For me it's the same.

Exp.

I am asking you because you have to tell what you feel.

D.

When they put me earplugs and headphones I don't know what they think.

Exp.

Well you know, whatever they think it's their thoughts. What matters to me is what you feel.

D.

[Digresses on personal episodes].

Exp.

So another question. After the operation, did you find it harder or easier to imagine things? By imagining I mean everything, for example imagine one object or a cup. Is it easier, harder or the same?

Picturing things in your mind. Did you notice differences?

D.

The difference is that two summer ago they said I half way or completely gone. Then thank to a woman I manage to stay here, the last year..[digression again]

Exp. 36:35

Before and after the last operation,

D.

I had quite some time to get better. and I had the operation in September and...[thinks when he had his last birthday and digresses some more].

Exp.

From what you remember, from what people close to you told you, were there big differences between before and after the operation?

D.

Difference in...

Exp.

For example before I asked you about imagination, but any difference at all. For example control or I also asked you about hearing differences. In very general terms, something specific or particular you noticed?

D.

Hmm particular things where many in the beginning since It was easy to recover after the second operation, the one in September no February, Yes January or February. Since each time I had a seizure, I would hit the back of my head, and therefore I have all scars at the back. So go to the emergency, get stitches....[digresses again.]

Exp. [39:14]

So in that respect did you notice a difference between legs? between one and the other?

D.

Are we talking about strength?

Exp.

Yes, also.

D.

The left one but it must be because I used to play soccer. few years with friends.

Exp.

So the left leg is stronger?

D.

Yes.

Exp.

When you are walking, do you perceive any difference among legs?

D.

No. Never felt anything like that.

Exp.

Perfect ok.

D.

Instead of the legs I have it on the arms, the left arm.

Exp.

In terms of the whole body, did you feel differences in how you feel it?

D.

We are talking about chest? The difference is toward the left part,

Exp.

But the difference is only on the arm?

D.

Yes, and on the leg. Before it was stronger, and now it has become weaker.

Exp.

So now the left is actually weaker than the right?

D.

Yes, appreciably.

Exp.

Whereas before it was instead the strongest.

D.

Yes it was the strongest and also there were more muscles. And on the right I don't have much equilibrium.

Exp.

So the left is weaker but with some equilibrium and the right leg instead has no equilibrium.

D.

In terms of memory, I am not like before. Before I could remember everything, who called, after 2 or 3 hours I could remember without having to write it down, now instead after even 5 minutes, I forget. For example tomorrow you call me, if I don't write down that you call for my mother or father, I forget.

Exp.

Ok but then if I write you a letter?

D.

The letter yes. I know it arrives at home, in that case yes. For example also with the phone.

Exp.

Ah, regarding the phone. You said you don't have differences when using one ear or the other or do you note differences?

D.

You mean differences in hearing capacity?

Exp.

Yes, for example yes.

D.

Hmm I never paid attention to it. I often use the left [mumbles and some things couldn't understand]

Exp.

So you always use the left arm?

D.

Aha.

Exp.

You mentioned you were left-handed?

D.

Nono.

Exp.

Were you right-handed?

D.

So I was left handed at the very beginning, when I was a child, then I started developing the right, and now I use only the right hand. If you give me a ball I kick it with my left though. I don't have anymore the strength I used to have.

Exp.

But you always kick with the left.

D.

Yes always with the left. With the right leg only stopping the ball.

Exp.

Ok if you try to use both of your arms at the same time, do you notice this difference?

For example when lifting a pan with water, or a similar thing.

D.

Mhh, I don't know because I never stay close to the fire since my parents were afraid I could fall. The water I wouldn't know how to answer.

Exp.

For example, if you are buttoning your shirt, or

D.

No buttoning my shirt I do it with the right.

With the left hand to close the button, to do the small things, I have difficulties with the left hand.

Exp.

Are there any other difficulties you experience with the left side in general?

Any example which comes to your mind. In any kind of situation.

D. [44:20]

With the left that I have difficulties, nope nothing else.

Exp.

With the right instead?

D.

Yes with the right yes.

Exp.

Anything you find easier to do with the right hand? Before and after the operation?

D.

The cutting of a steak, also my parents told me, I wield the knife with the left hand.

Exp.

So you use your left hand for the knife?

D.

Yes, always.

Exp.

Before and after the operation you always use the left hand?

D.

No, before always the left [not clear to understand]. For grasping a glass there is no difference between left and right.

Exp.

So you can grab a glass with either you left or right hand without any difference, but instead for cutting something like a steak it is easier with the left.

D.

Yes, it is a steak yes. If I try to use the knife with the right hand I don't know, I never tried.[digresses] No, I don't find myself (referring to using the right hand).

Exp.

Are there other things you are not comfortable doing with the left hand?

D.

With the left hand, if you give me a plate holding a sponge, the plate with the left I cannot do it. Instead, if you tell me with the left go to the bathroom and brush your teeth, I use the left hand. Never right hand.

Exp.

So thinking about the things you can with your left hand without problem you can brush your teeth, holding a glass with no difference, are there any other things easier to do with the left hand? Or that you find yourself conformable.

D.

But that I find myself comfortable, brushing my teeth, the dishes, with the sponge,

Exp.

When you use the sponge to wash the dishes you use your left hand. Or lets say you find yourself comfortable.

D.

It also depends on how I am. No,no. [mumbles something]. I first started with the left hand and then used the right hand.

Exp.

Any other things which changed from doing with the left to the right hand? Beside the steak and washing dishes?

D.

Hmm memory. I don't remember anymore as before [47:28] Before I remembered everything from A to Z. Now at the phone, a woman, after two or three days I would remember anyways. So if I looked what time it was, now to remember it I have to write it down. Instead before not.

Exp.

Any other things besides memory. Which noticed differences?

D.

Well different the sensitivity. Between left and right. With the left being less sensitive. With the left hand I cannot recognise items, like blind folded, as the right hand.
[digresses]

Exp.

With the right hand instead not?

D.

No with the right hand it's all good. Maybe they got crossed. But I don't know.[digresses again].

Exp.

Ok we are done.

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