

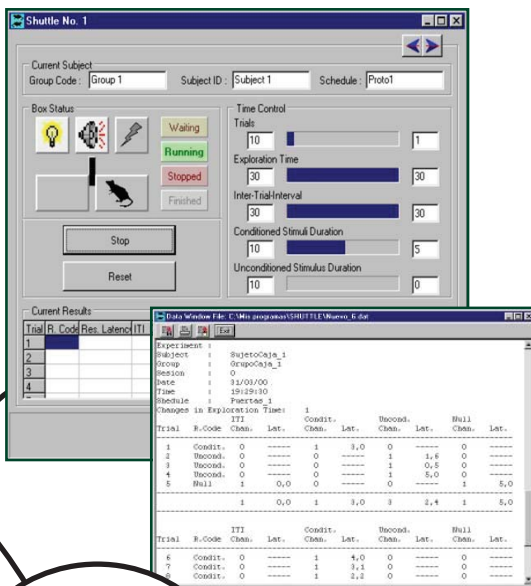
Active Avoidance

LF0820A

Anxiety and Memory

Using highly sensitive system
for detection of animal position...

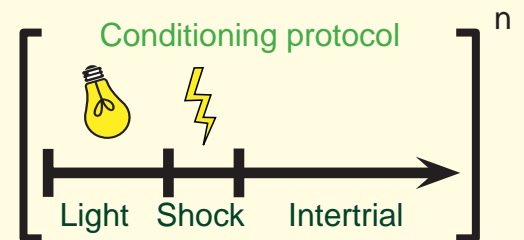
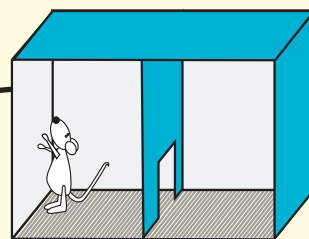
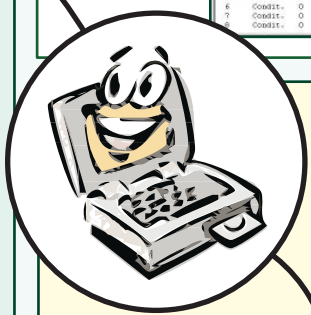
SHUTTLE SOFTWARE



$$\text{Learning} = f \left(\frac{\text{No. of Conditioned responses}}{\text{No. Total of responses}} \right)^{\text{time}}$$

- ✓ Detection of animal position using WEIGHT TRANSDUCER TECHNOLOGY
- ✓ On-line information about the running trial
- ✓ Number of Conditioned, Unconditioned and Null responses/trial
- ✓ Total of Conditioned, Unconditioned and Null responses

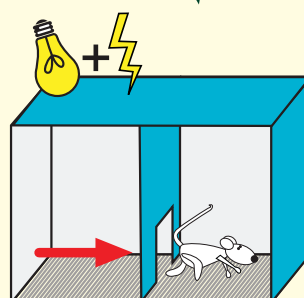
CLASSICAL ACTIVE AVOIDANCE PARADIGM



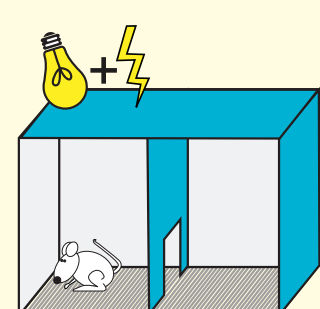
Conditioned response



Unconditioned response



Null response



SHUTTLE BOX

The Shuttle Boxes LE 916 (for Rats) and LE 918 (for Mice) provide the ideal environment for carrying out the Conditioned Reflex Studies (Active and Passive Avoidances).

The Animal is detected by two force transducers located above the static grids, that are activated by the weight of the animal, avoiding the problems inherent to photoelectrical or grid tilting systems due to the speed of mice or the tail of rats.



The Shuttle Box by Panlab is thought to be easily set up and dismantled. Therefore, reconverting it to traditional Passive Box (composed by one big white compartment and one small black compartment) is very straightforward.

Furthermore, it is possible to set up different wall shapes or colours in order to conditionate either visually or spatially the subject of study.

FEATURES

- Two compartments cage, floor with two independant grids
- A frontal door, in addition to the top ones, allows an easy access inside the box
- Shock appearance in the programmed compartment only
- Visual Stimulus: two lights, one in each compartment
- Acoustic Stimulus:
 - Frequency: 300 - 3000 Hz
 - Intensity: 0 -120 dB
- Optional Guillotine Door
- Optional: Freezing and activity recording
- Controlled by programmer (LE 2708) or Software (SHUTAVOID)
- Selectable: Ratio 1 / Ratio 2

Cage Measures (cm)	
Model	Compartment
LE 918 Mice	19 x 19 x 27 (h)
LE 916 Rats	25 x 25 x 27 (h)

Door Measures (cm)	
Model	Door
LE 918 D	7 x 7
LE 916 D	8 x 8

SOUNDPROOF BOX LE 26

The Soundproof Box ensures that the Shuttle Boxes are insulated from sounds, lights and exterior shadows. Made with an aluminium structure and fitted with a frontal entrance with a large transparent red glass view port to reduce vision from the inside the LE 26 Box.

It has an acoustic attenuating capacity of more than 60dB and is fitted with a ventilator that, aside from replenishing the interior air supply, also produces a constant background noise. The Box is lit with an incandescent 40W light the brightness of which is adjustable to the user's requirements by means of an electronic regulator.



Dimensions	Internal	External
	60 x 41 x 48(h) cm	66 x 54 x 54(h) cm

BOX CONTROLLING ...

The SHUTTLE BOX cage may be controlled either by a LE 2708 Programmer or by SHUTAVOID Software. The first option is unexpensive and recommended for one single box setups, while the second is suitable for controlling a number of boxes simultaneously.

Typical working protocol involves timing of transitions, i.e. time that the animal takes to move from one zone (white and ample in the traditional shuttle box) to the other, where it will get an electric shock. Under normal conditions, the subject will take longer time to move into this zone, or even it will refuse to enter (memory).

PROGRAMMER



LE 2708
Programmer/Shocker

- Programmable timers (Inter Trial Interval, Conditioned Stimuli and Unconditioned Stimulus duration)
- 3 Counters: for Inter Trial Interval, Conditioned Stimuli and Unconditioned Stimulus responses
- 1 counter to preselect number of trials and duration
- Suited to control the guillotine door
- Adjustable intensity shock from 0 to 2 mA
- 6 channels Electronic Scrambler, by scanned pulse shift
- Active and Passive avoidance schedules
- PC communication (RS 232) and SeDaCom soft

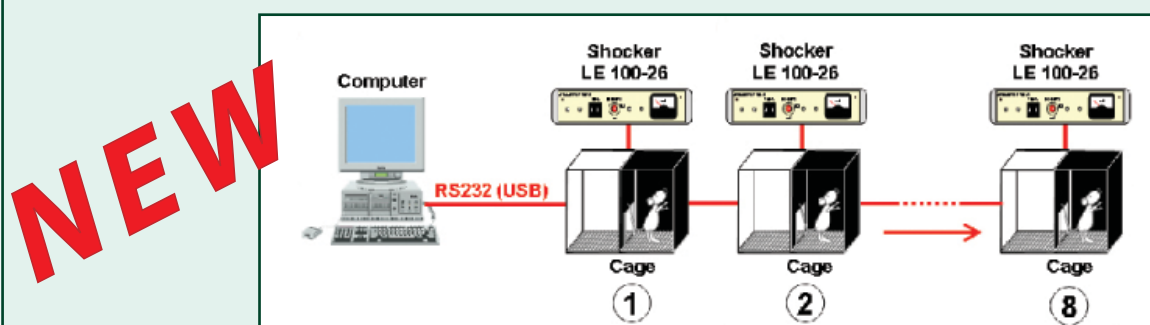
Data are transferred to an external printer or computer in the following format:

L.S.I. Leticia Scientific Instruments		PROGRAMMER AVOIDANCE						V1.0	
ID.	DURATION (Trials)	TIMER-A		TIMER-B		TIMER-C		RESPONSE	NON-RESPONSE
		RESPONSE	NON-RESPONSE	RESPONSE	NON-RESPONSE	RESPONSE	NON-RESPONSE		
1	5	0	4	0	0	0	0	0	0
L.S.I. Leticia Scientific Instruments		PROGRAMMER AVOIDANCE						V1.0	
ID.	DURATION (Trials)	TIMER-A		TIMER-B		TIMER-C		RESPONSE	NON-RESPONSE
		RESPONSE	NON-RESPONSE	RESPONSE	NON-RESPONSE	RESPONSE	NON-RESPONSE		
1	5	1	3	0	1	0	1	0	1
2	5	0	4	0	0	0	0	0	0
3	5	2	2	0	2	0	0	0	2
4	5	1	3	0	1	0	1	0	1
5	5	1	3	0	1	0	1	0	1
6	5	1	3	0	1	0	1	0	1

Safety System that guaranties the intensity received by the animal is always the same value (pre-selected by user) independently of the grid bars treaded.

It is not necessary the interface neither the use of board installed into the PC.

The link is carried out by one only cable from one Box to the other. The first Box is connected to PC or Laptop by the port RS 232 or USB.



NEW

- Adjustable intensity source from 0 to 2 mA
- Electronic Scrambler through 6 channels, by scanned pulse shift
- Selectable Time from 0,1 to 9 sec or by soft control

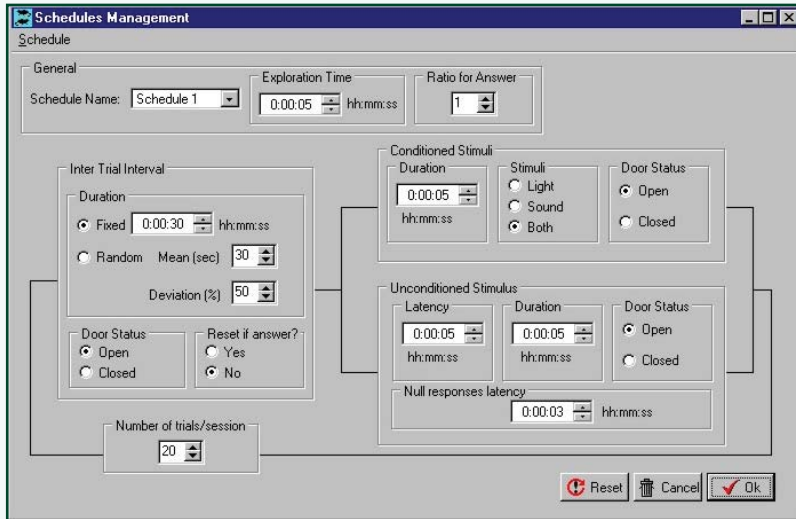
Safety System that guaranties the intensity received by the animal is always the same value (pre-selected by user) independently of the grid bars treaded.



LE 100-26
Shock Generator

SHUTAVOID

The Software SHUTAVOID - 01 controls independently up to 8 Shuttle Boxes or Passive Cages. The software detects how many cages are physically present and activates the corresponding windows.



- Unlimited number of protocols to be defined, either common or different for each cage

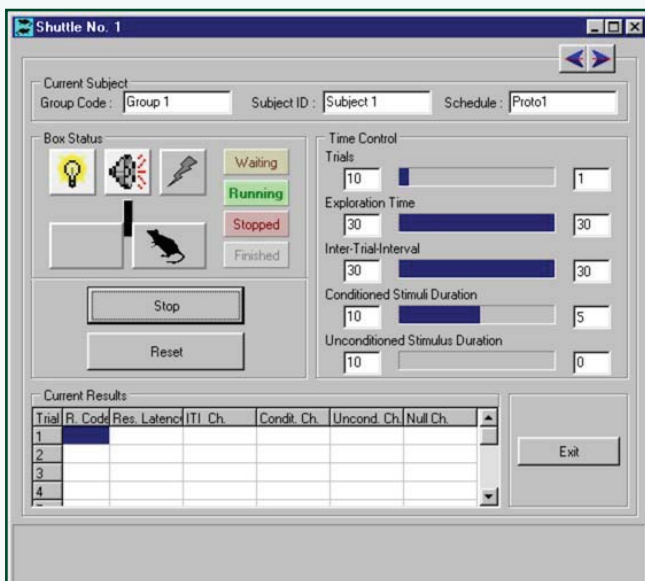
A) Inter Trial Interval: The duration can be fixed or randomized (defining in this case Mean Time & deviation)

B) Conditioned Stimuli: Light, Sound or Both stimuli can be activated by the user, as well as the Duration

C) Unconditioned Stimulus: The researcher can define the Latency, Duration and Null Responses Latency Periods

- The Door Status (Open / Closed) can be defined independently in each interval

- Each Experimental Session is controlled by a Control Window (one for each Shuttle present), where the user can see the information about the running of the session
- Visualization of the animal's position
- When the animal is introduced in the cage, the program runs automatically (independently for each cage)
- Cage performance testing from the keyboard (light, sound..)
- Data can be seen as Raw Data file and as Tabulated Data



Data Window File: C:\Mis programas\SHUTTLE\Nuevo_6.dat

```

Experiment :
Subject : SujetoCaja_1
Group : GrupoCaja_1
Session : 0
Date : 31/03/00
Time : 19:29:30
Schedule : Puertas_1
Changes in Exploration Time: 1

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Trial	R.Code	ITI Chan.	Lat.	Condit. Chan.	Lat.	Uncond. Chan.	Lat.	Null Chan.	Lat.
1	Condit.	0	----	1	3,0	0	----	0	----
2	Uncond.	0	----	0	----	1	1,6	0	----
3	Uncond.	0	----	0	----	1	0,5	0	----
4	Uncond.	0	----	0	----	1	5,0	0	----
5	Null	1	0,0	0	----	0	----	1	5,0
		1	0,0	1	3,0	3	2,4	1	5,0

Trial	R.Code	ITI Chan.	Lat.	Condit. Chan.	Lat.	Uncond. Chan.	Lat.	Null Chan.	Lat.
6	Condit.	0	----	1	4,0	0	----	0	----
7	Condit.	0	----	1	3,1	0	----	0	----
8	Condit.	0	----	1	2,2	0	----	0	----