



PACS-30 主被動行為迴避箱



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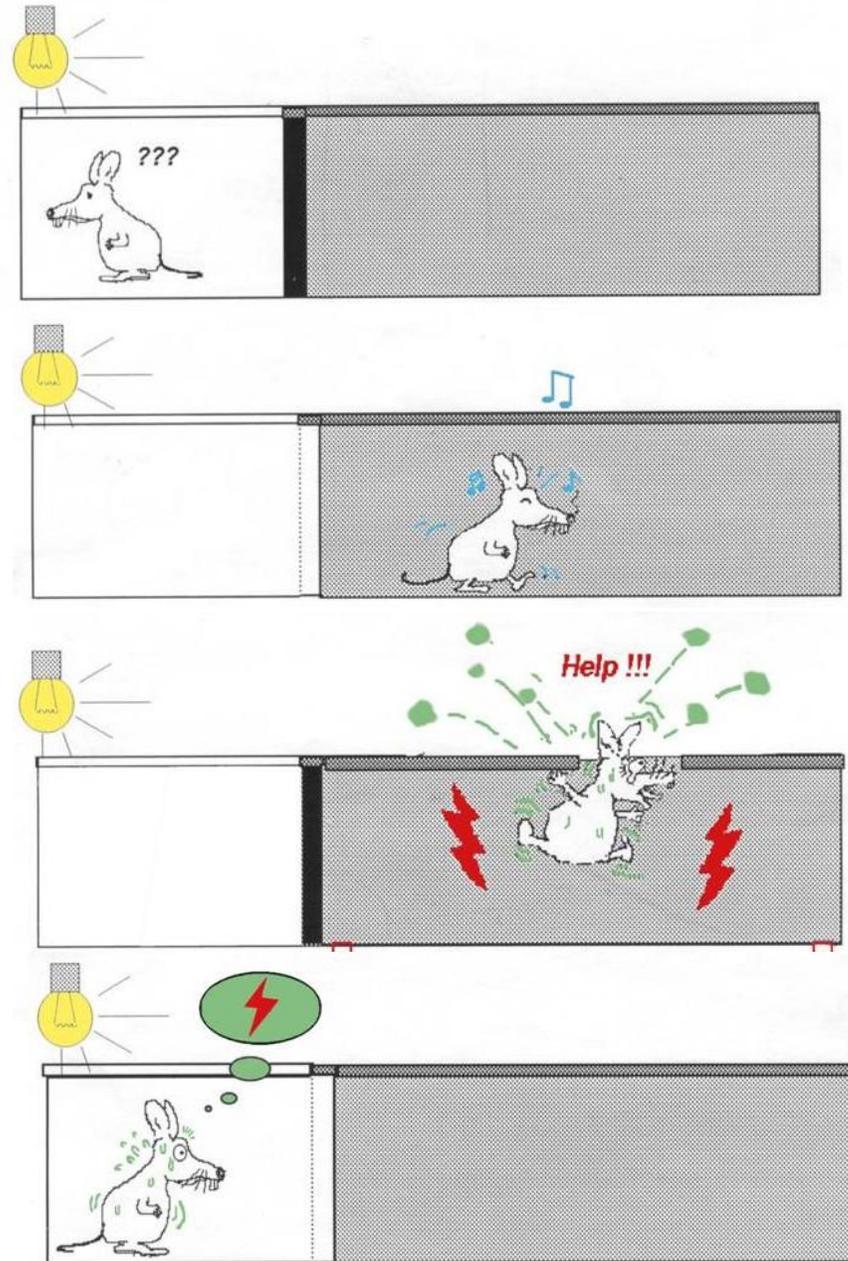
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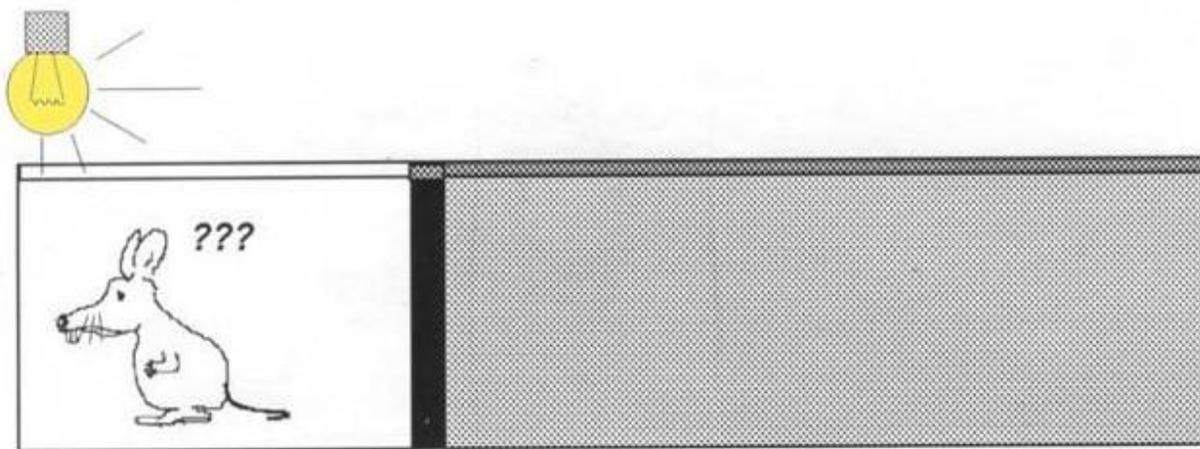
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Avoidance 迴避



Avoidance & Escape

- 迴避(Avoidance)與逃避(Escape)
 - 嗜暗，逃避亮光的的天性(Escape from light)
 - 迴避進入暗室被電擊的潛時(滯留時間)



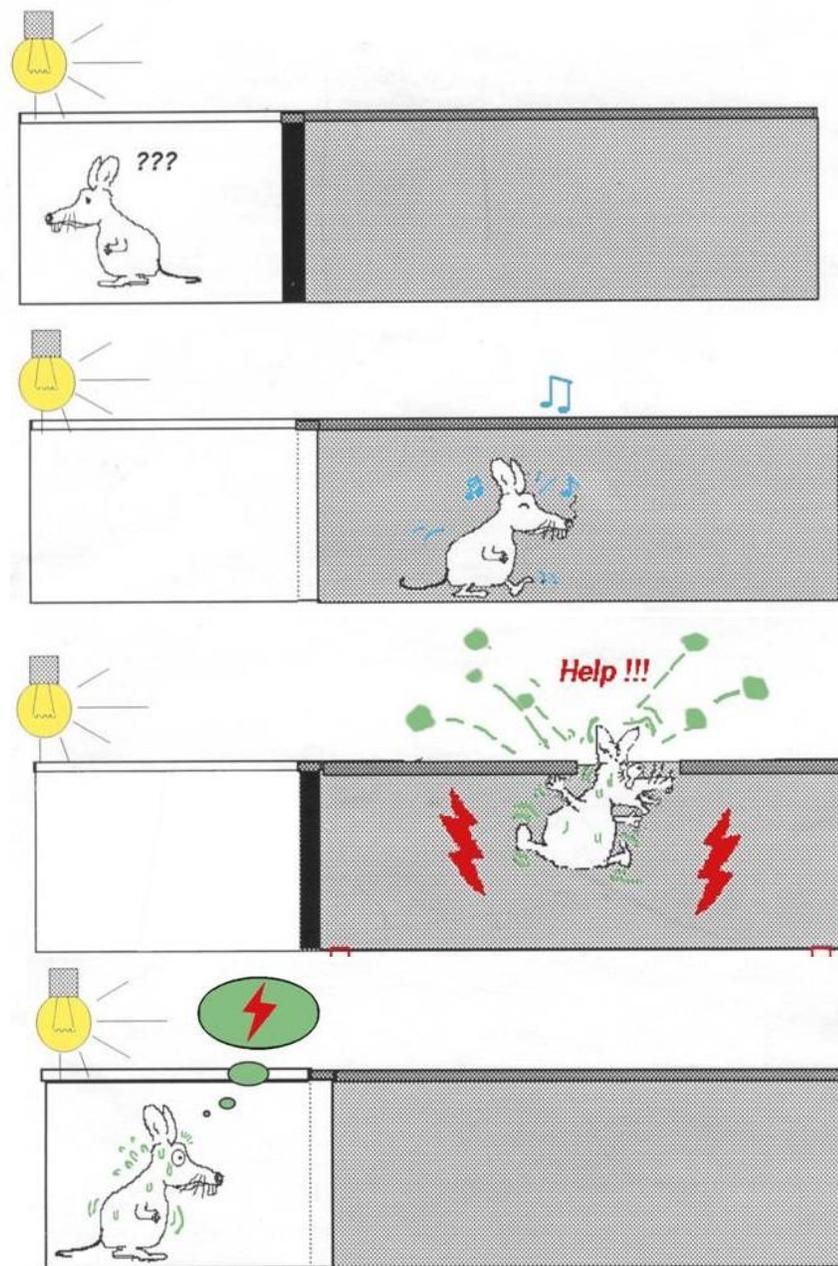
Passive Avoidance- Pre-pulse Inhibition Test

- 被動迴避(逃避)實驗
 - 隔成明室與暗室，中間有門(隔屏)，可電動控制
 - 箱底有平行排列的金屬桿，可電擊



刺激

- 制約刺激(Conditioned Stimulus, CS)
 - Cue燈及聲源的刺激
- 非制約刺激(Unconditioned Stimulus, UCS, US)
 - 足底的電擊刺激



被動回避參數

- Exploration Duration: 自由探索時間(00:00 to 59:59)
- CS Light Intensity 光強度(0 to 150 Lux)
- CS Light Start Time (開燈時間,ex 3:00 實驗開始後3分鐘開燈)
- Maximum Trial Duration 最大實驗時間(00:00 to 59:59)
- UCS Grid Intensity (電刺激強度 0.0mA to 1.0mA)
- UCS Grid Duration (電刺激時間 00:00 to 59:59)
- Close Door Upon Transfer (動物移動後關門)
- Inescapable Shock (動物移動過門後是否電刺激逞罰)

Experiment Mode :

Exploration Duration :	<input type="text" value="00:01:00"/>
Maximum Trial Duration :	<input type="text" value="00:02:00"/>
CS Light Intensity :	<input type="text" value="10"/>
UCS Grid Intensity (mA) :	<input type="text" value="0.5"/>
UCS Grid Duration :	<input type="text" value="00:00:05"/>
Close Door Upon Transfer :	<input checked="" type="checkbox"/>
Inescapable Shock :	<input checked="" type="checkbox"/>



被動迴避實驗的內容

- 老鼠放入明室，隔屏打開，自由進出、熟悉環境
 - 老鼠喜好待在暗室中(escape from light)
- 24小時後，再放入明室，當老鼠走進暗室
 - 隔屏自動關上
 - 給予一定時間的足底電擊(ex. 3sec, 1mA)
- 再過24小時，觀察其記憶留存效果
 - 由明室進暗室的潛時(明室滯留時間)



迴避實驗的應用

- 癡呆症或腦血管意外，造成學習記憶障礙
- 阿茲海默氏症
- 老年癡呆症
- 失智症
- 藥物開發(是否增加潛時)

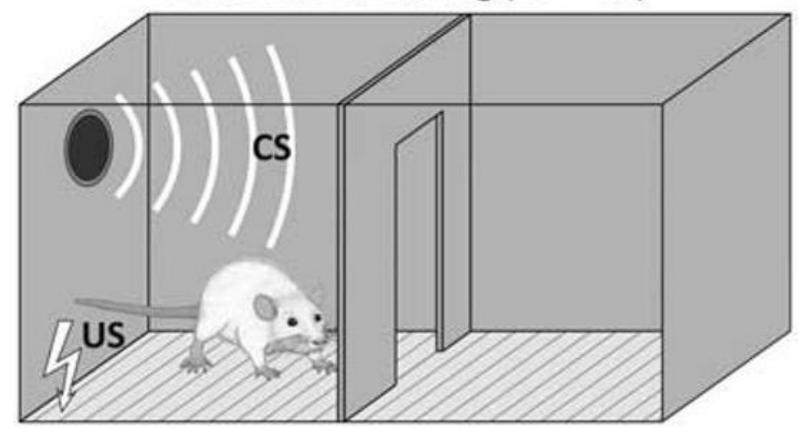
Active Avoidance

- 主動迴避實驗
 - 兩個箱室都是暗室，中間有門(隔屏)
 - 箱底有平行排列的金屬桿，可電擊
 - 有Cue燈及聲源

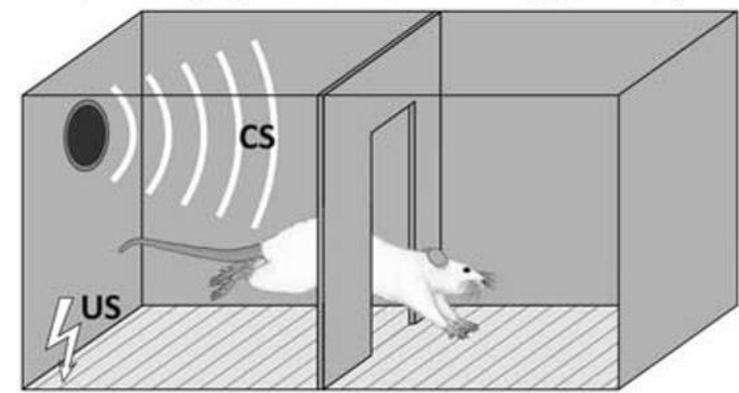


Active Avoidance

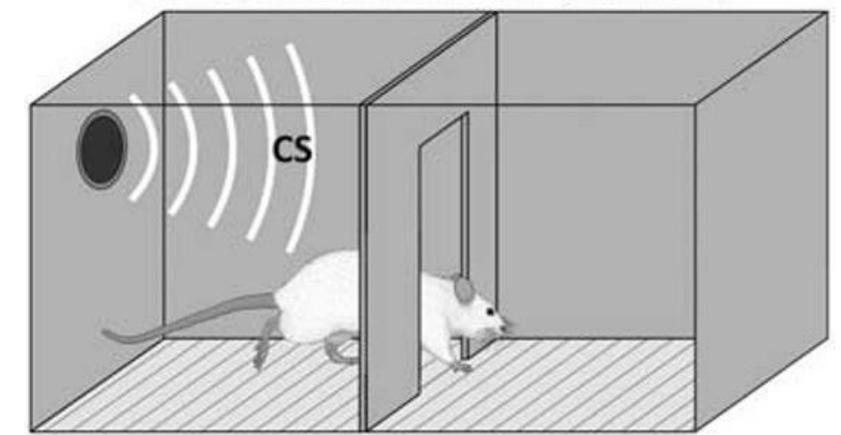
Threat Conditioning (CS + US)



US Escape/Avoidance Learning (CS + US)



Avoidance Performance (CS alone)





主動迴避實驗的內容

- 放入老鼠，10秒後
- 給予制約刺激(Cue燈及聲音)，10秒
- 10秒後，老鼠如仍未移動
 - 給予非制約刺激(足底電擊，ex. 5sec，0.3mA)
- 觀察在兩個箱室間的穿梭/門不關



CS及UCS

- 給予CS(Cue燈及音)刺激後，就跑到另一邊
 - 迴避反應(Avoidance Response)
- 等到UCS(足底電擊)刺激後，才跑到另一邊
 - 逃避反應(Escape Response)



記憶與學習

- 歸納多次來回穿梭的反應(Response)
 - 迴避反應次數愈少(CS刺激下)
 - 記憶能力愈差
 - 逃避反應次數愈多(UCS刺激下)
 - 學習能力愈差



主動回避參數

- Exploration Duration 自由探索時間(00:00 to 59:59)
- Maximum Trial Duration 最大實驗時間(00:00 to 59:59)
- Inter-Trial Interval 時間間隔時間
- Total Number of Trials 總實驗次數
- CS Light Intensity 光強度(0 to 150 Lux)
- CS Light Start Time (提示燈起始時間,ex 3:00 實驗開始後)
- CS Light Duration 提示燈時間
- CS Sound Start Time 聲音發出時間
- CS Sound Frequency 聲音頻率
- CS Sound Intensity: 聲音大小
- CS Sound Duration 聲音總長度
- UCS Grid Start Time 電刺激起始時間
- UCS Grid Intensity 電刺激強度
- UCS Grid Duration 電刺激長度
- Punish Inter-Trial Transfer(是否電刺激逞罰)

Experiment Mode : Active Avoidance ▼

Exploration Duration :	00:01:00
Total Number of Trials :	30
Maximum Trial Duration :	00:00:10
Inter Trial Interval :	00:00:50
CS Light Intensity :	0
CS Light Start Time :	00:00:00
CS Light Duration :	00:00:00
CS Sound Intensity :	4
CS Sound Frequency :	2900
CS Sound Start Time :	00:00:00
CS Sound Duration :	00:00:10
UCS Grid Intensity (mA) :	0.5
UCS Grid Start Time :	00:00:06
UCS Grid Duration :	00:00:04
Punish Inter-Trial Transfers :	<input type="checkbox"/>



最後結果

PACS Shuttle Box v3.13 : Rat-03.SDA

File Setup Run Tools Help

PACS 30 Active Experiment Data File

12/12/07 12:00:02 Data File: Rat-03.SDA Box: 1

Trial Duration: 00:10
 Inter-trial Interval: 00:50
 Total # of Trials : 20

Stimulus Intensity Start Time Duration
 CS Light: 0 00:00 00:00
 CS Sound 2.9 kHz: 4 00:00 00:10
 UCS Grid (mA): 0.5 00:06 00:04

Trial Num.	Transfer Type	Elapsed Time (Seconds) Start	Light	To Transfer Sound	From: Shock	Intertrial Transfers
1	Avoid	00:01.30	00:01.30	00:01.30	-----	1
2	Avoid	00:04.42	00:04.42	00:04.42	-----	0
3	Escape	00:07.31	00:07.31	00:07.31	00:01.31	3
4	Avoid	00:00.74	00:00.74	00:00.74	-----	0
5	Avoid	00:03.05	00:03.05	00:03.05	-----	0
6	Escape	00:06.81	00:06.81	00:06.81	00:00.81	0
7	Escape	00:07.25	00:07.25	00:07.25	00:01.25	1
8	Avoid	00:01.69	00:01.69	00:01.69	-----	0
9	Escape	00:06.25	00:06.25	00:06.25	00:00.25	1
10	Avoid	00:03.30	00:03.30	00:03.30	-----	1
11	Avoid	00:05.42	00:05.42	00:05.42	-----	0
12	Avoid	00:04.17	00:04.17	00:04.17	-----	1
13	Escape	00:06.36	00:06.36	00:06.36	00:00.36	0
14	Avoid	00:03.84	00:03.84	00:03.84	-----	0
15	Escape	00:06.56	00:06.56	00:06.56	00:00.56	0
16	Avoid	00:02.23	00:02.23	00:02.23	-----	0
17	Escape	00:06.55	00:06.55	00:06.55	00:00.55	0
18	Avoid	00:05.05	00:05.05	00:05.05	-----	0
19	Escape	00:06.55	00:06.55	00:06.55	00:00.55	1

Export to CSV Page 1 Close

- 迴避/逃離時間
- 迴避/逃離次數



Thanks for your attention