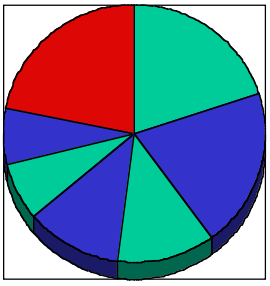
Compound Conditioning

Overshadowing:
Reduced learning to one element of a compound due to the simultaneous presence of an easier-to-condition element.

Blocking: Prior conditioning to one element

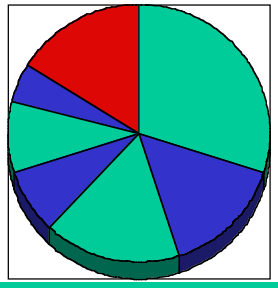
pretrain	Compound Conditioning
A – US	AB – US

Compound Conditioning



Vmax is divide between elements.

Overshadowing

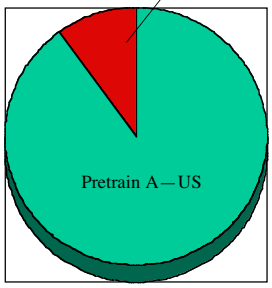


Limited Vmax to divide between elements.
More salient CS gets more.

Blocking

Limited Vmax left to divide during AB—US trials

$\Delta V = c\,(Vmax - Vtot)$
after pretraining,
$Vmax - Vtot \approx 0$



Limited Vmax to divide between elements.
Pretrained CS already got most of it.

Conditioned Inhibition

Recall: CS–US

In R-W, conditioned inhibition is a –V

How do you get a –V?

A — US
AB —

A — US
B —

Notice:
1. Some trials CS_B presented, other trials not.
2. Some trials US presented, other trials not.

Steps for working the model:

1) What CSs are Present?
   a) 1 formula for each
   b) add current Vs to make Vtot
   c) ΔV for others = 0 and their Vs are not included in Vtot

2) Is the US Presented?
   a) if yes, then Vmax = setting
   b) in no, then Vmax = 0

Conditioned Inhibition

Recall: CS → US

In R-W, conditioned inhibition is a –V

A — US → V_A increases

AB —

Both V_A and V_B decrease

Conditioned Inhibition

Recall: CS → US

In R-W, conditioned inhibition is a –V

A — US → V_A increases

B —

$\Delta V = c(0 - V_B) = c(0 - 0) = 0$!!!

How does V_B become negative?

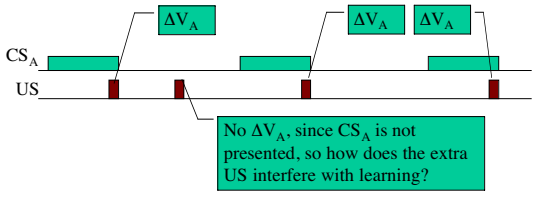
Background cues (context); C is present on both trials

So really: AC – US

BC –

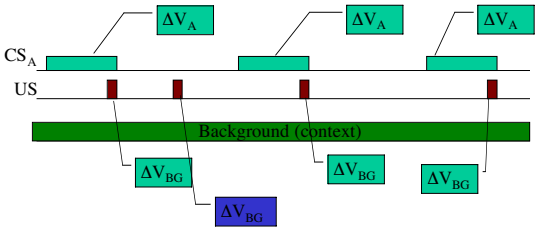
Contingency

Like Conditioned Inhibition, Background Cues are important



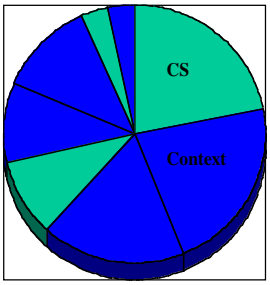
Contingency

Like Conditioned Inhibition, Background Cues are important



Compound Conditioning

Vmax is divide between elements.



Background gets an extra bite of the Vmax pie when the US is presented without the CS. Less Vmax left for the CS.

Blocking and Unblocking

Question: Is the added CS during blocking even noticed?

	pretrain	Compound Conditioning	Test B
Group 1	A – US	AB – US	Learning about B blocked
Group 2	A – US	AB – US	Show learning about B

Increased Vmax Now (Vmax-Vtot) is not ≈ 0

Why in R-W terms?

New Prediction: Overexpectation

	pretrain	(1 trial) Compound Conditioning	Test elements: A alone, B alone
Group 1	A – US B – US	AB – US	Smaller CR
Group 2 (control)	A – US B – US	———	

An additional pairing DECREASES learning!?

Why in R-W terms?

After pretraining:
$V_A \approx Vmax$
$V_B \approx Vmax$

On compound trial:
$\Delta V = c\ (Vmax - Vtot)$
$\Delta V = c\ (Vmax - (V_A + V_B))$
$\Delta V = c\ (Vmax - 2Vmax)$
$\Delta V = c\ (-Vmax)$

Limitations:

Latent Inhibition (CS pre-exposure effect):
Presentation of the CS by itself retards subsequent conditioning to that CS.

Slower Learning

	Pre-exposure	Conditioning
Group 1	A	A — US
Group 2	—	A — US

Why a problem for R-W?

On CS only trials, no US presented, so
$\Delta V = c\ (0-0) = 0$

Limitations:

Configural Learning:
Learning that a compound means something different than each of its elements.

A — US
B — US
AB —

or

A —
B —
AB — US

Why a problem for R-W?

If V_A is positive, and V_B is positive, $(V_A + V_B)$ cannot be negative!
(and vice versa)