

Medication & Anxiety:

New Findings in Children

Daniel S. Pine, MD

Section on Development and Affective Neuroscience



Outline

- Current Standards
 - *SSRIs*
 - *CBT*
 - *Prevention with CBT*
- Neuroscience
 - *Extinction Training*
 - *Attention Retraining*

Outline

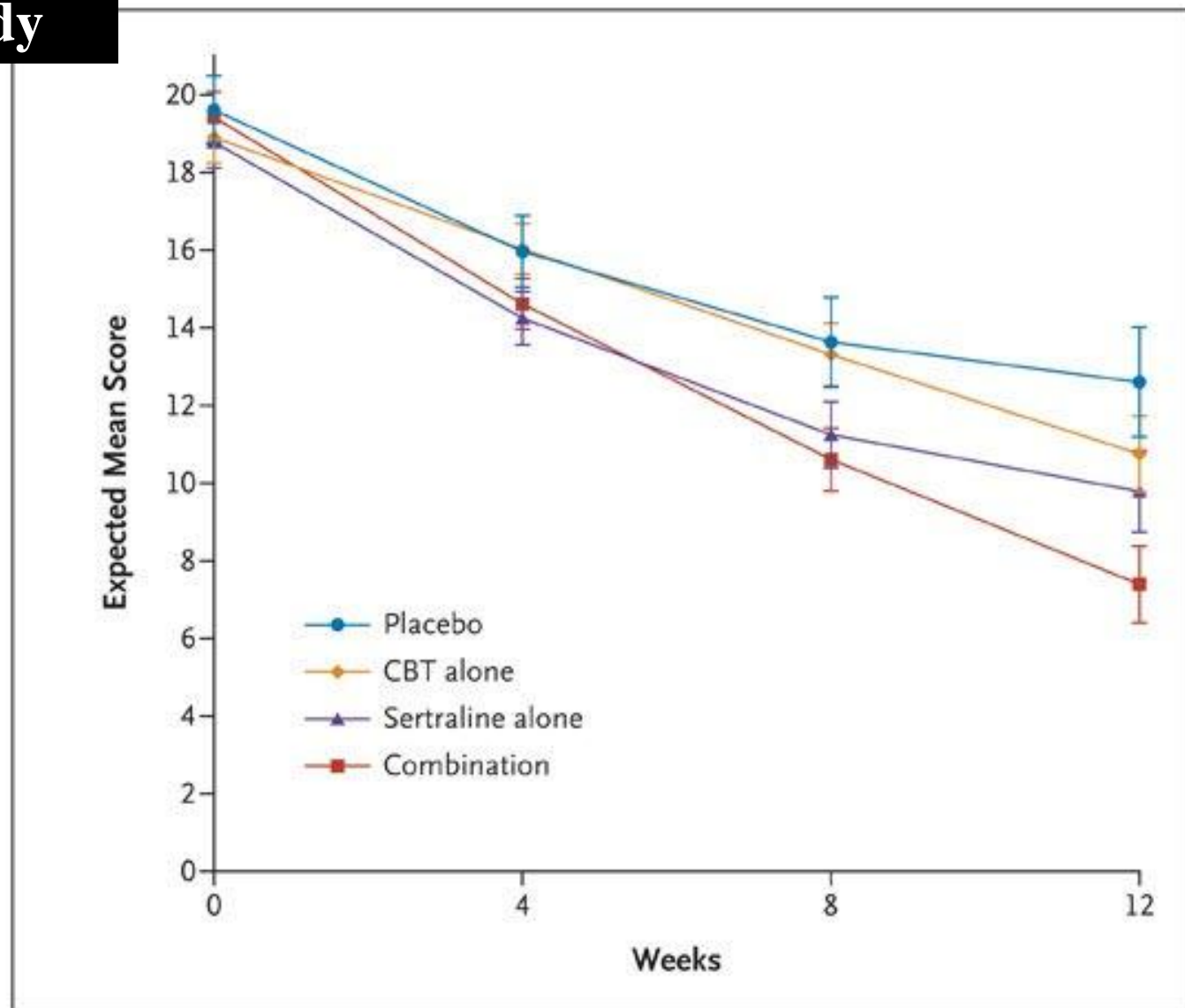
- **Current Standards**
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Meta-Analysis: *Rates of Improvement*

Study	Difference	PBO	SSRI
RUPP Anxiety Study (2001)	47%	29%	76%
Birmaher et al. (2003)	25%	36%	61%
Rynn et al. (2001)	80%	10%	90%
Wagner et al. (2004)	40%	38%	78%
Walkup et al. (2008)	31%	24%	55%
Rynn et al. (2007)	12%	24%	36%
Total	30%	31%	61%

NNT=3.3

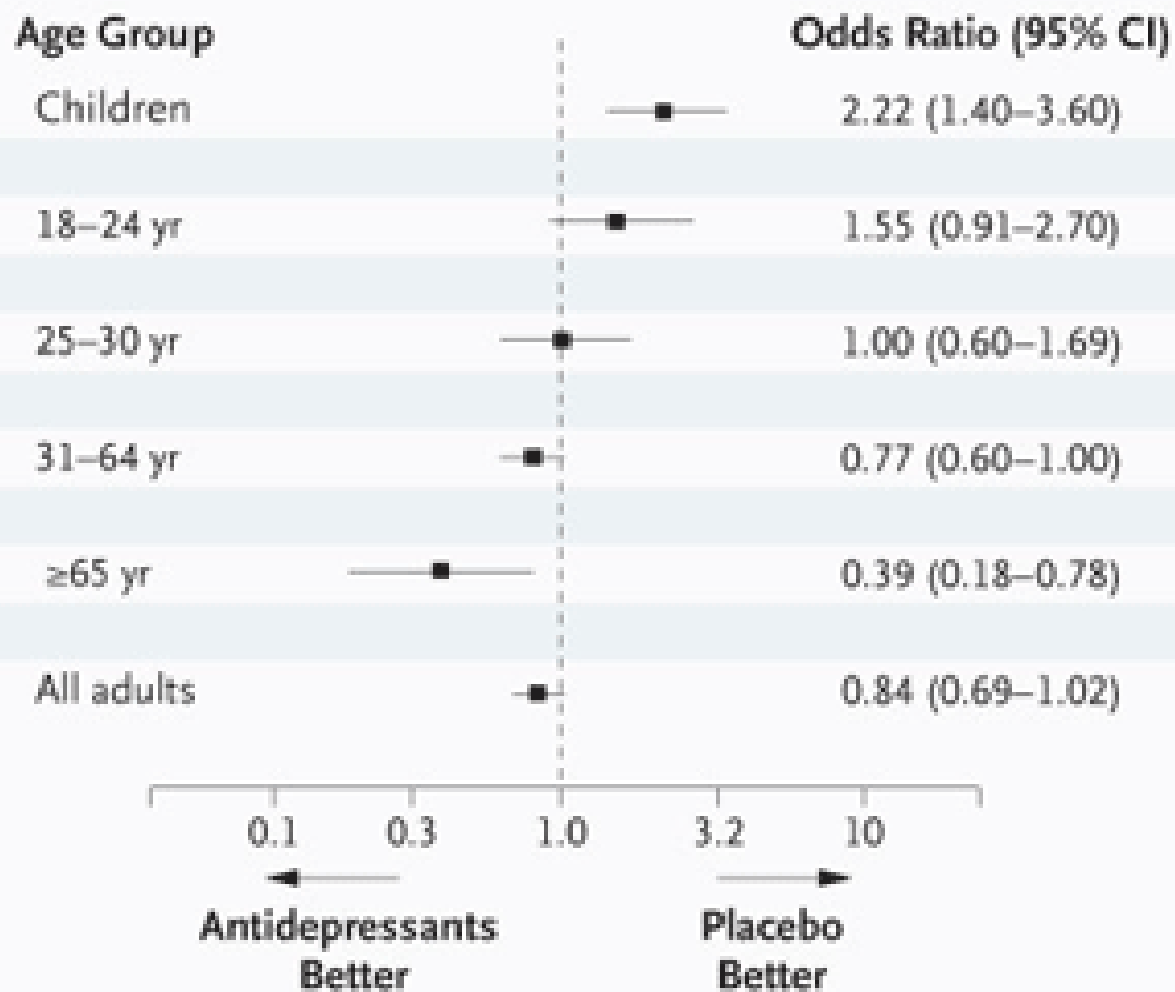
The CAMS Study



Treatment – Anxiety vs. MDD

- **Response rates**
 - Higher in anxiety than MDD
- **Relapse**
 - Higher in MDD than anxiety
- **Implications for prevention**
 - CBT in at-risk groups?

Antidepressants and Thoughts About Suicide



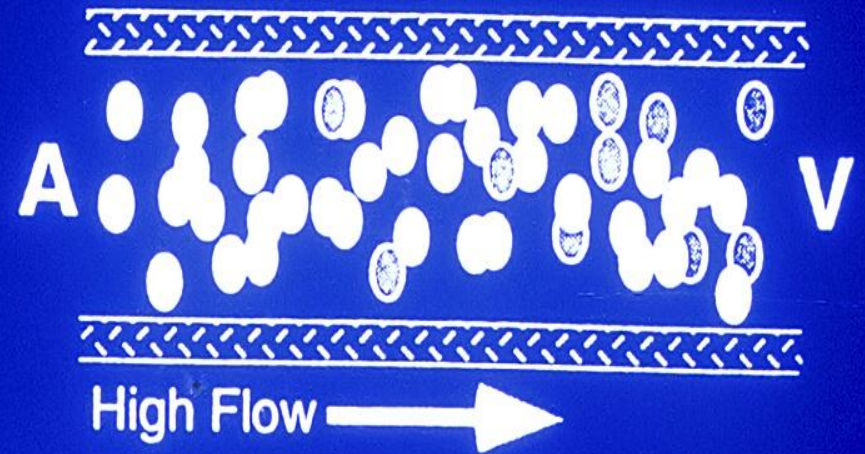
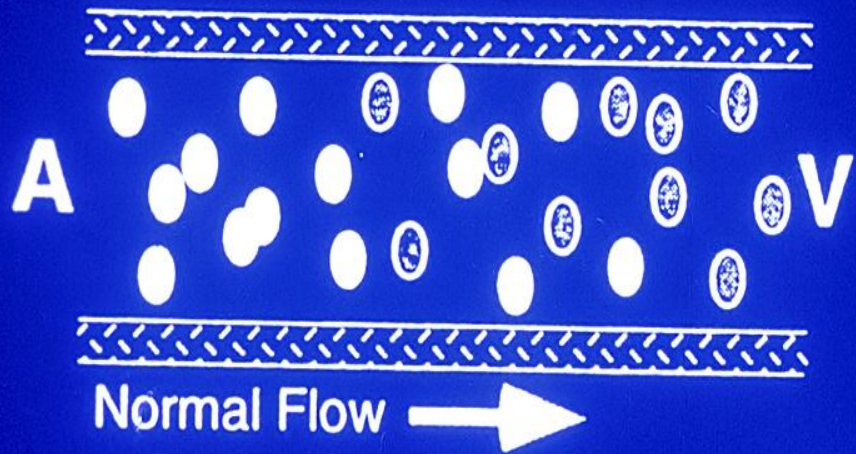
FDA Analysis from December, 2006

Conclusions

- SSRIs are very effective in the treatment of pediatric anxiety.
- Of the SSRIs, only fluoxetine and citalopram have been clearly shown to be effective in pediatric MDD.
- Increased risk of suicidality with SSRI treatment is real, but the magnitude of the effect is small.

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- Oxyhemoglobin
- Deoxyhemoglobin

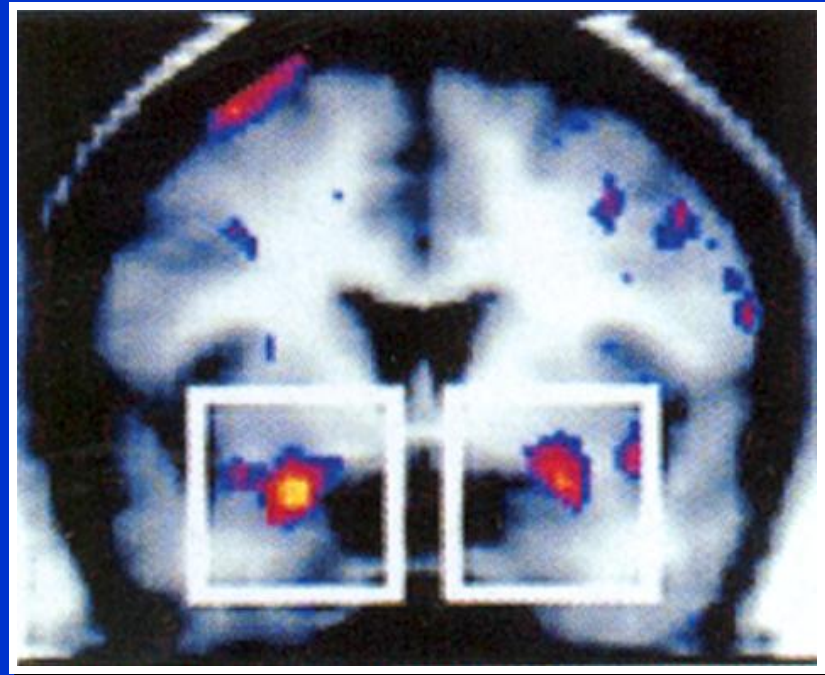
Amygdalar Activation

Exposure to Fearful Face

Amygdala hyperactivity in adult MDD and anxiety



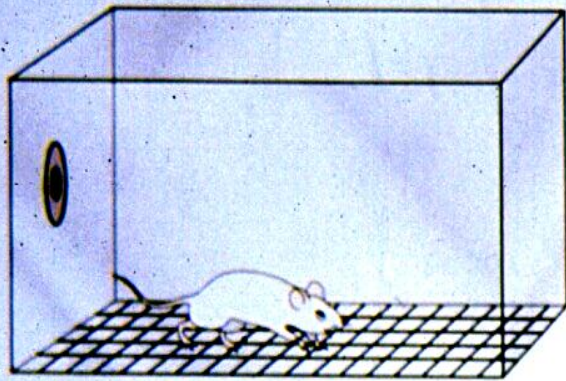
VS.



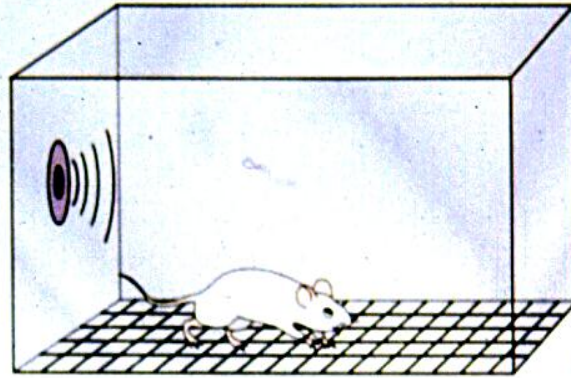
Bilateral Amygdala Activation

Breiter et al. 1996; Whalen et al. 1998

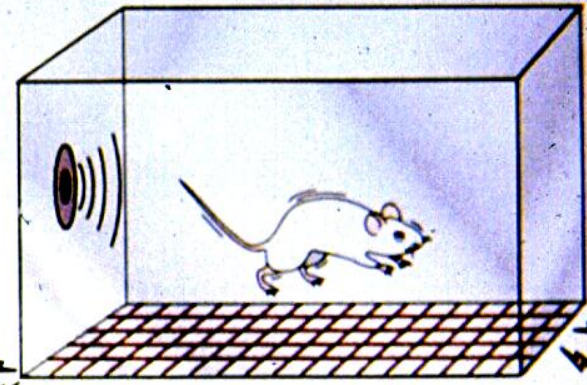
TRAINING



Exposure to context (2 min)

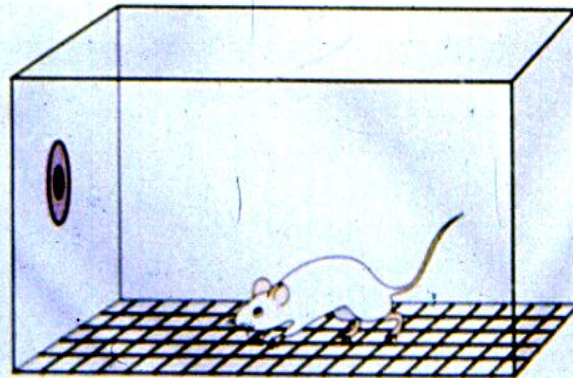


Onset of sound (CS: 30 s)



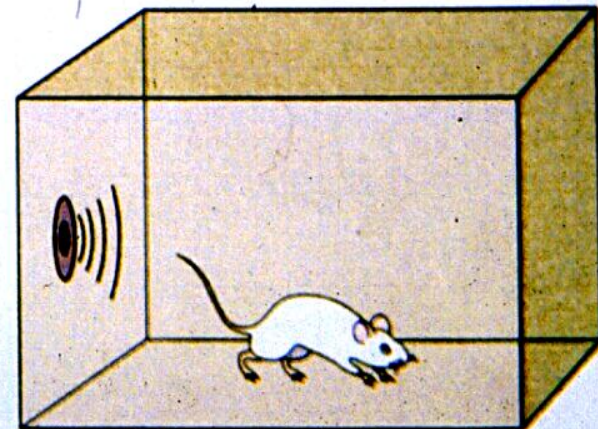
Onset of shock (US: 2 s)

TESTING: Context
Test at 1 hour
and 24 hours



Same context (5 min)

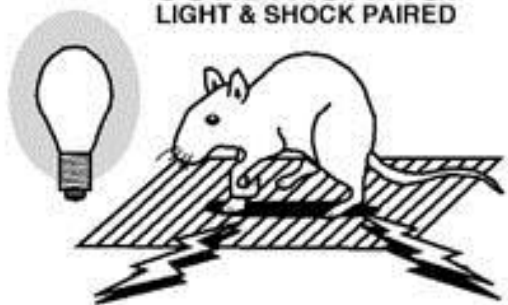
TESTING: Cued
Test at 1 hour
and 24 hours



Onset of sound (CS: 3 min)

A

CONDITIONING:
LIGHT & SHOCK PAIRED



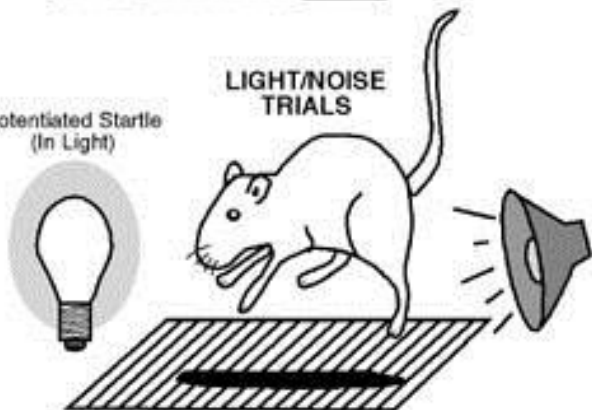
TESTING:
NOISE-ALONE
TRIALS

Normal Startle
(In Dark)



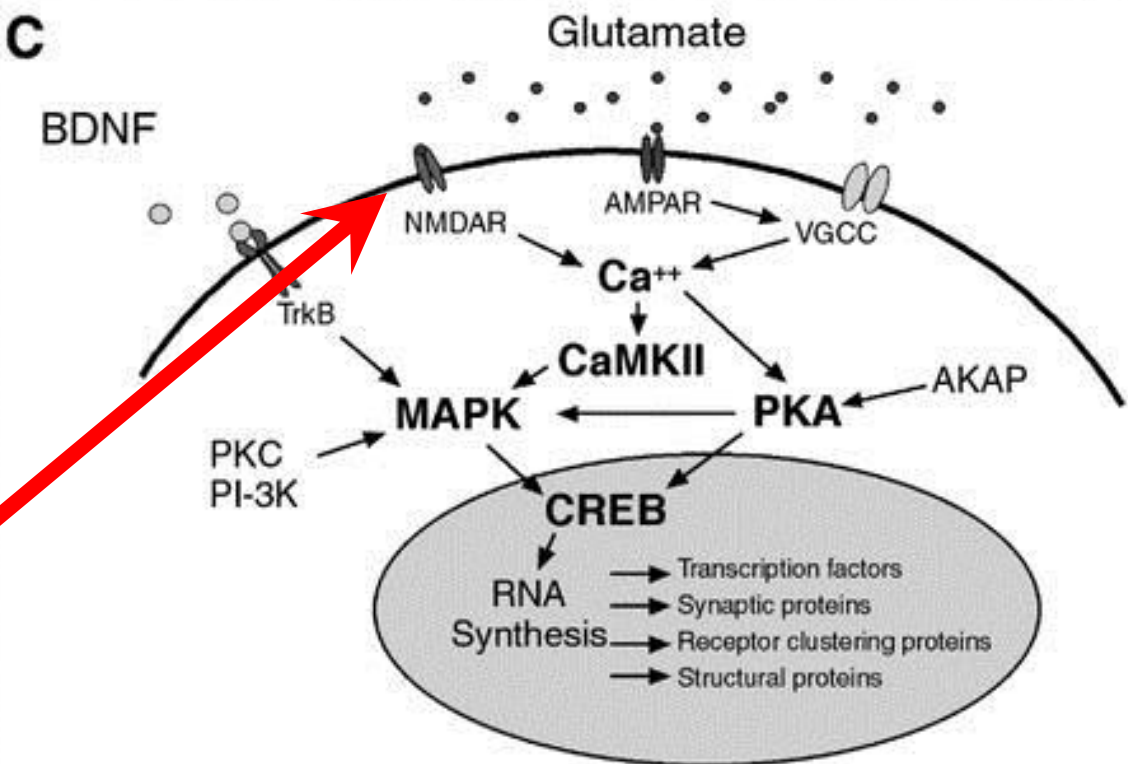
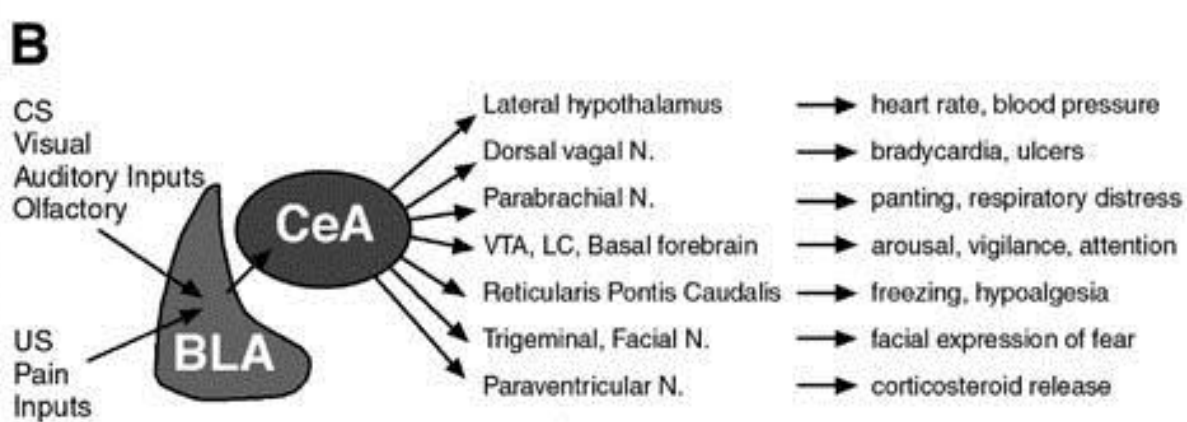
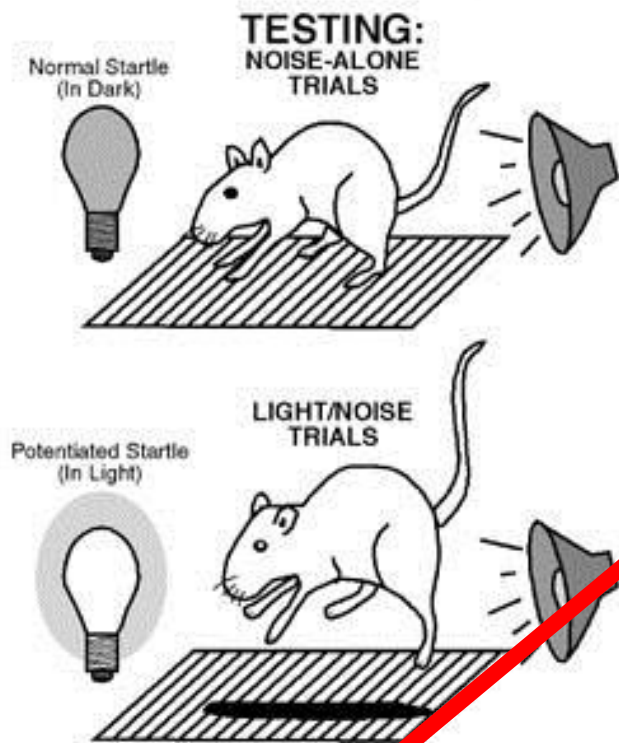
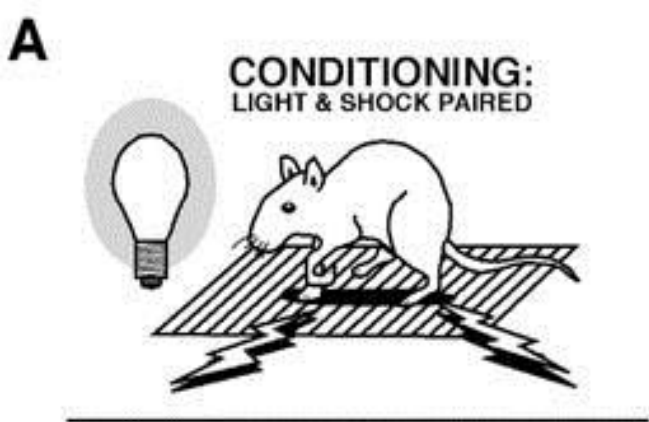
LIGHT/NOISE
TRIALS

Potentiated Startle
(In Light)



Extinction Recall: *Remembering the Boundary Between Danger and Safety*

Ressler & Davis 2003



NMDA manipulations?

Ressler & Davis 2003

VISUAL
CORTEX

VISUAL THALAMUS

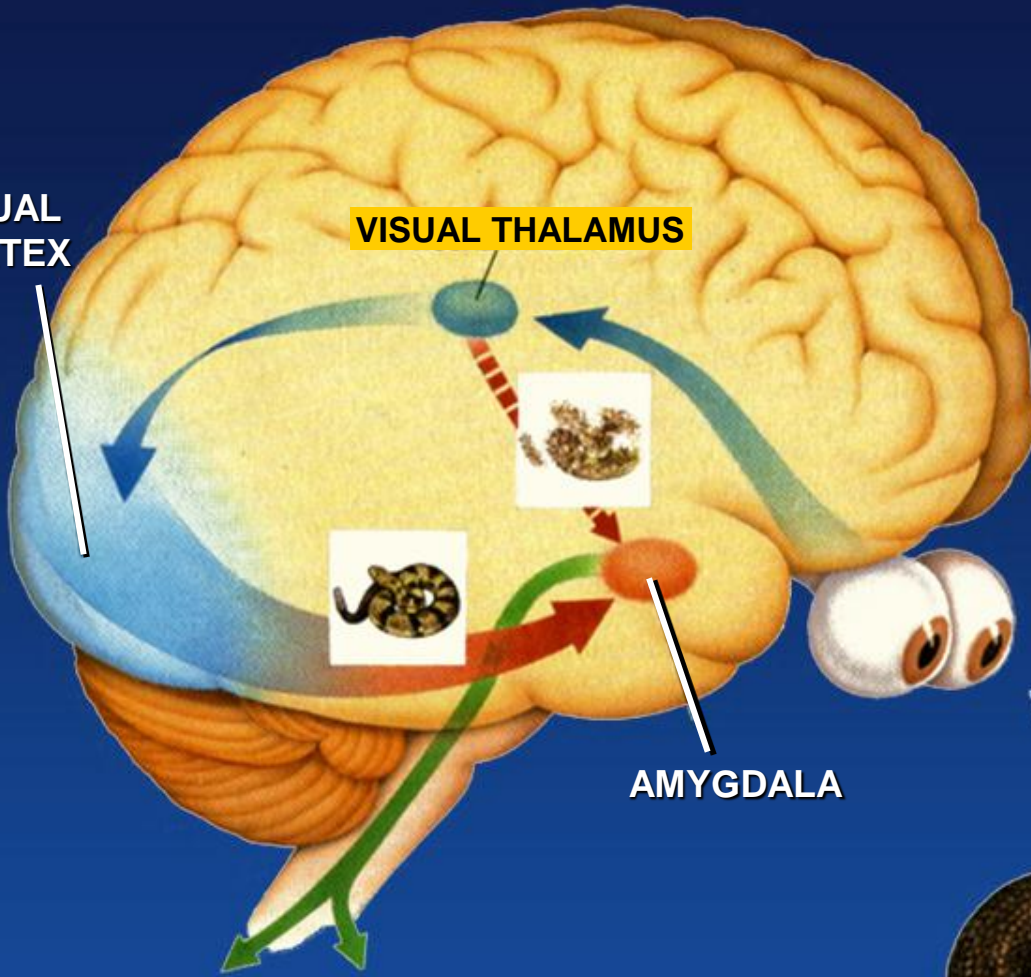
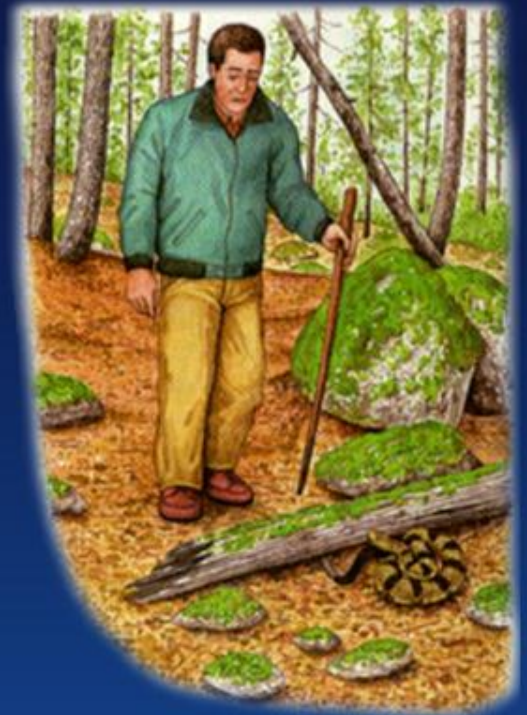
AMYGDALA

HEART RATE

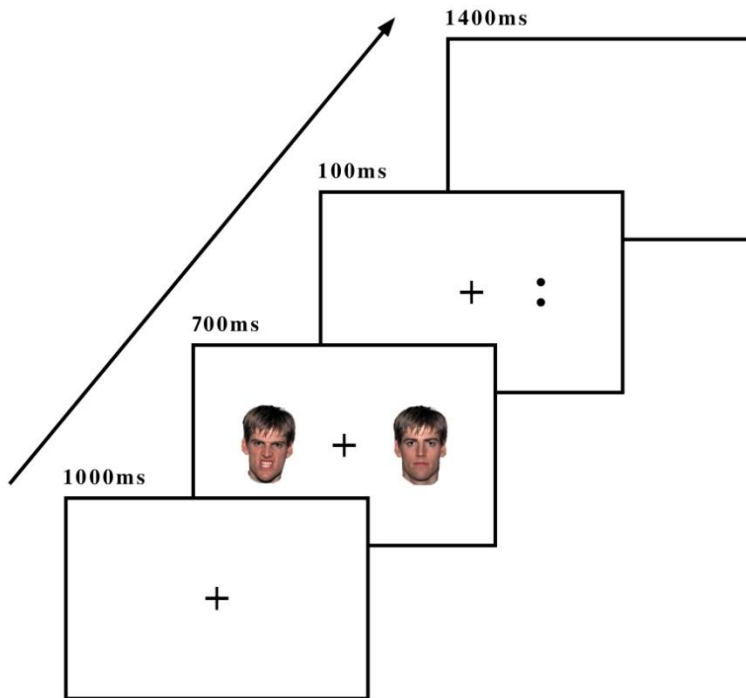
BLOOD PRESSURE

MUSCLE

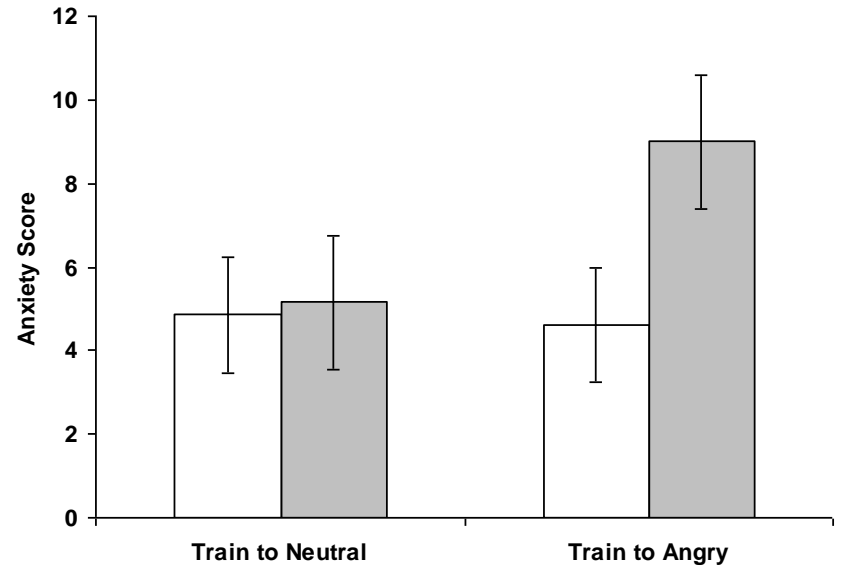
LeDoux. *Sci Am.* 1994;270:50.



Attention Retraining Therapy



Training of Attention



Altered Response to Stress

Eldara, Ricona, & Bar-Haim in press

Randomized Controlled Trial

Four-Week Treatment Outcomes in Pediatric Anxiety Disorders

Tel-Aviv University/National Institute of Mental Health
Attention Bias Modification Treatment

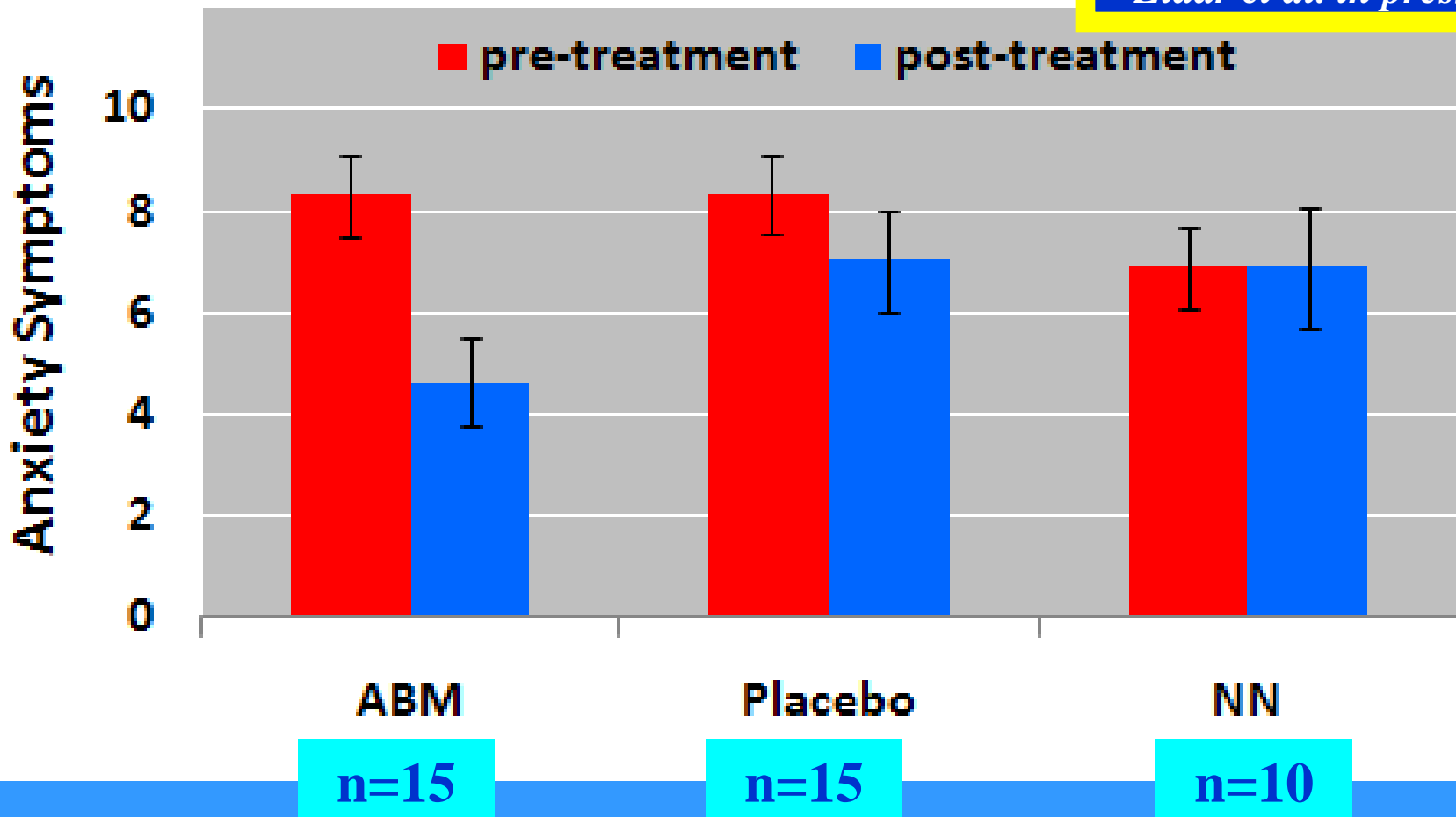
<http://tau.ac.il/~yair1/index.html>

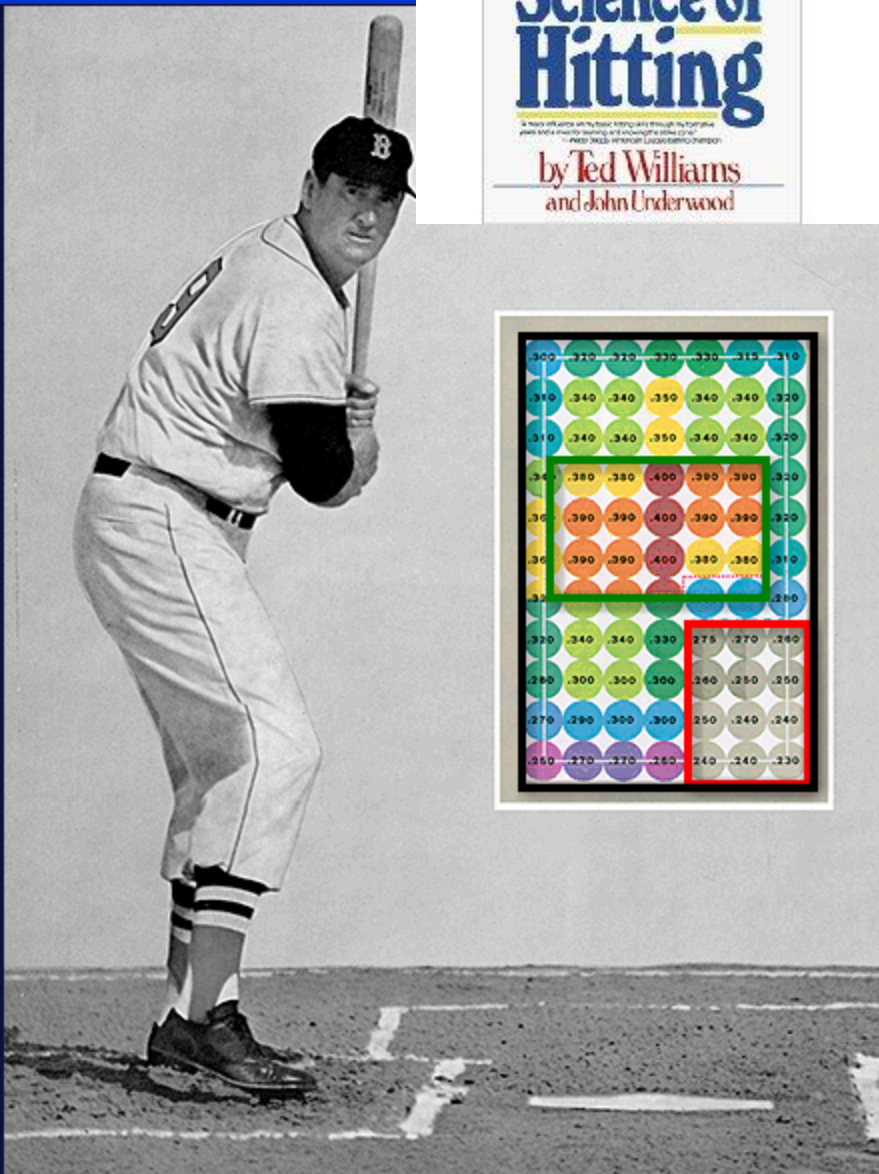
*Screened 117 children
n=71 identified
n=40 with Pre-Treatment Bias Towards Threat*

Randomized Controlled Trial

Four-Week Treatment Outcomes in Pediatric Anxiety Disorders

Eldar et al. in press






Click to **LOOK INSIDE!**

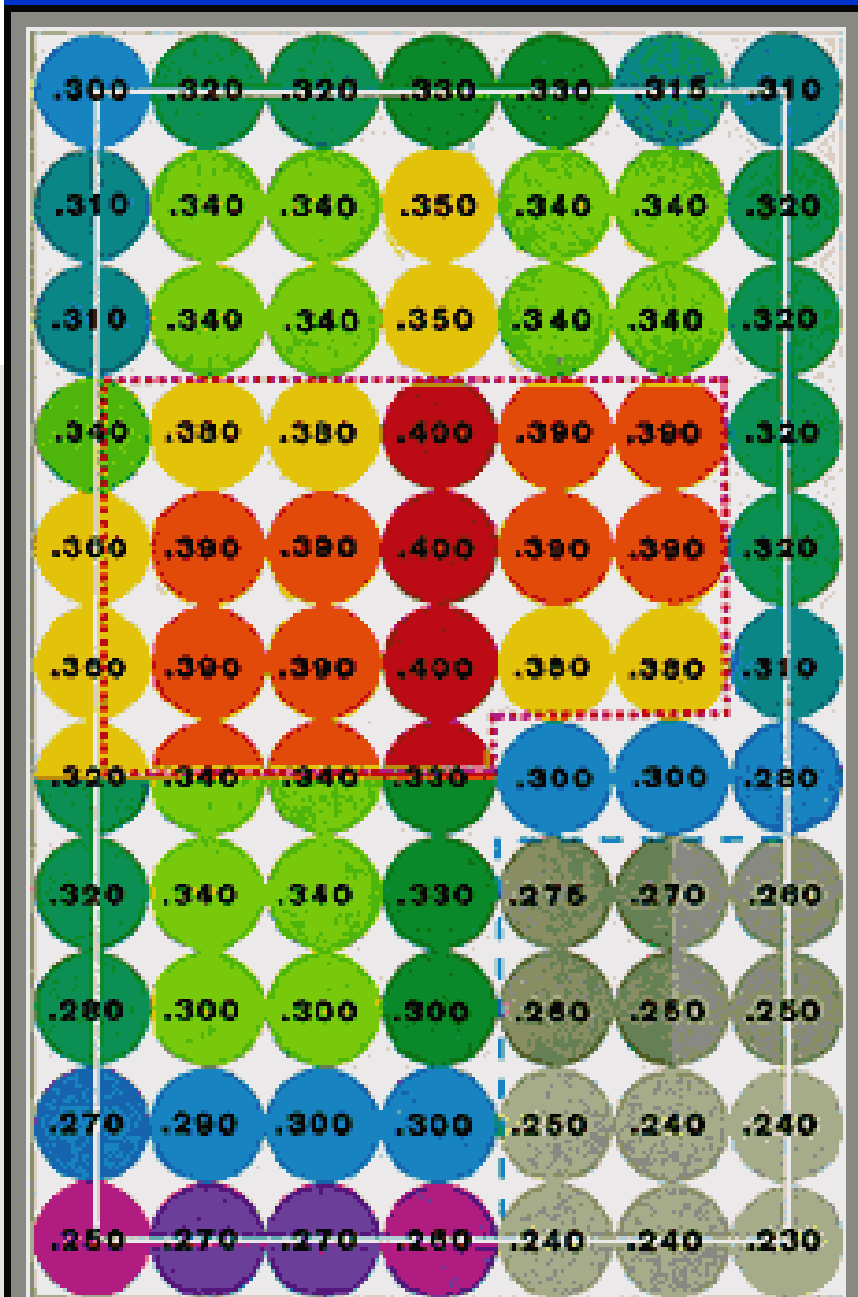
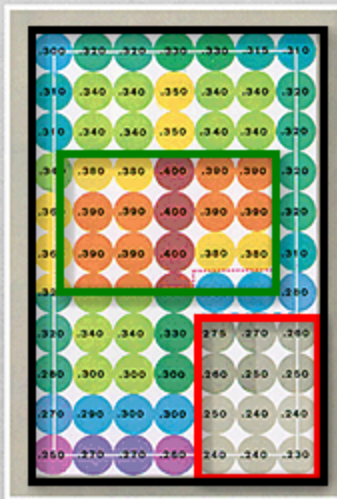
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 by **Ted Williams**
 and **John Underwood**



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