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**Exercise**  
**Change the position of your watch, put a book on your lap, put your phone in a different pocket or put a pencil behind your ear.**



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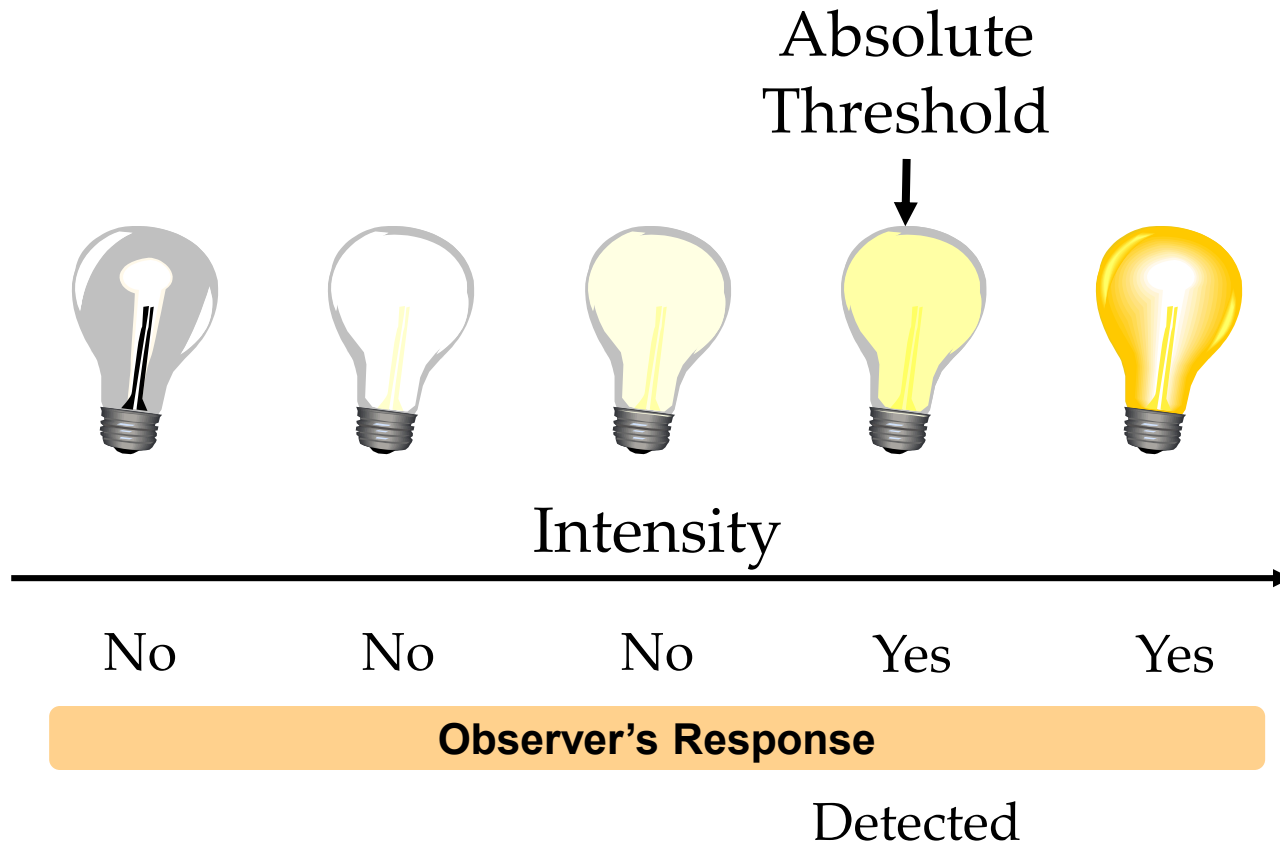
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# Psychophysics

Methods that measure the strength of a stimulus and the observer's sensitivity to the stimulus.

Physical World	Psychological World
Light	Brightness
Sound	Volume
Pressure	Weight
Sugar	Sweet

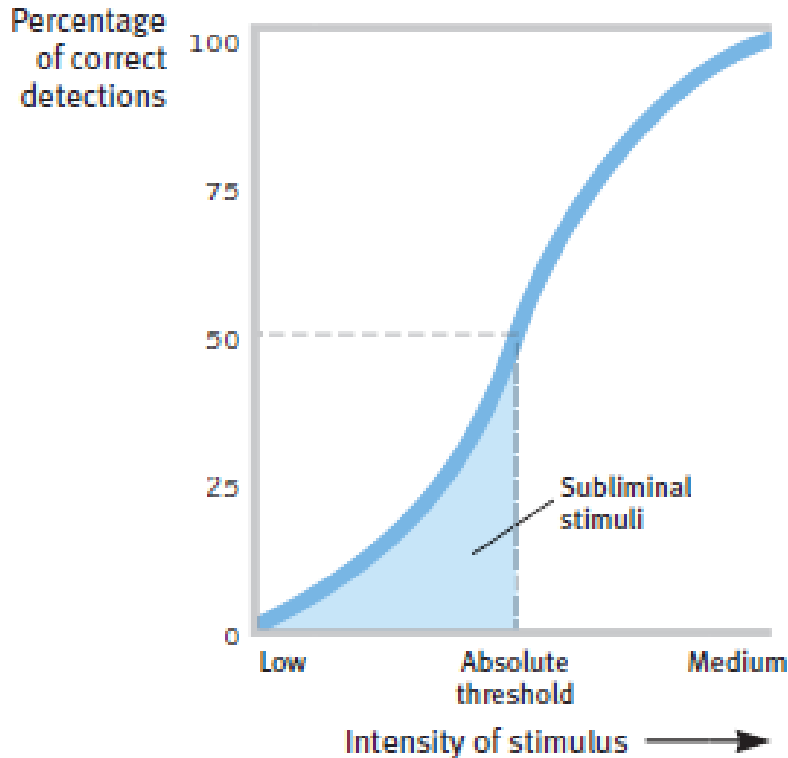
# Detection



Tell when you (the observer) detect the light.

# Thresholds

The **absolute threshold** refers to the minimum level of stimulus intensity needed to detect a stimulus half the time.



Anything below this threshold is considered "subliminal."

# Signal Detection Theory

- The detection of a stimulus depends on both the intensity of the stimulus and the physical and psychological state of the individual.



**Stimulus event**



**Neural activity**



**Comparison with  
personal standard**



**Action (or no action)**

- Absolute thresholds are not really absolute.
- Psychological factors such as the person's experience, expectations, motivations, and alertness affect what we sense.



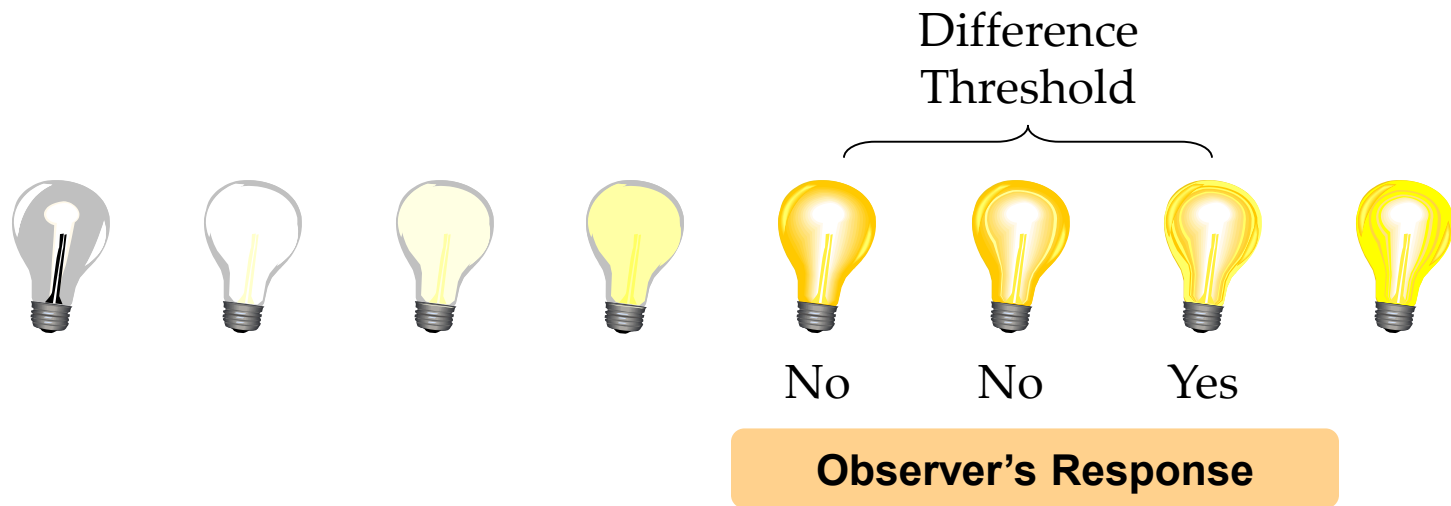
New parents are have been home with their newborn for only a couple of days. They have decided to take turns waking up with the baby during the night. The mother's sister and her husband are also staying with the new parents to help them out.

- Considering both present and absent responses produces four possible outcomes

		State of the World	
		Signal Present	Signal Absent
Observer Response	"Respond - yes"	Hit	False Alarm
	"Respond - no"	Miss	Correct Rejection

# Difference Threshold

**Difference Threshold:** Minimum difference between two stimuli required for detection 50% of the time, also called *just noticeable difference (JND)*.



Tell when you (observer) detect a difference in the light.

**Which red box is darker than the other two?**





# Weber's Law

- Computes the *Just Noticeable Difference*.
- The change needed is *proportional* to the original intensity of the stimulus.
- The proportion is important for a noticeable difference, not the amount..
- The more intense the stimulus the more change is needed to notice the difference.



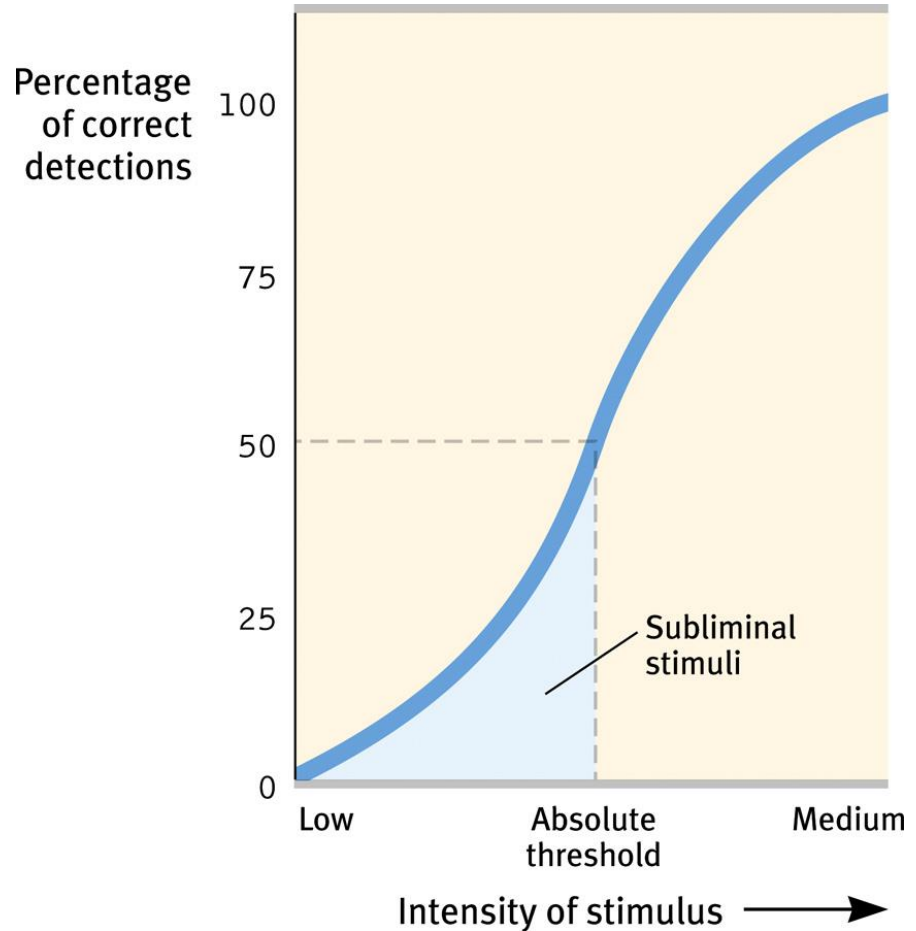
Stimulus	Constant (k)
Light	8%
Weight	2%
Tone	3%

# Subliminal Threshold

**Subliminal Threshold:**  
When stimuli are **beneath**  
one's absolute **threshold of**  
**conscious awareness.**



Kurt Scholz / Superstock



# How does stimuli that falls below our conscious awareness (subliminal threshold affect us?)



Derren Brown  
"Psychological illusionist"

**Priming** refers to an increased sensitivity to certain stimuli due to prior experience.

- Relies on implicit memory
- Research shows it may be able to affect decision making. (Jacoby, 1983)
- Further research suggests that any influence is fleeting.



# Demonstration

- **•Half of you will be group A.**
- **•Half of you will be group B.**
- **•Group B, please close your eyes.**

- Group A
- HORSES

- **Instructions**

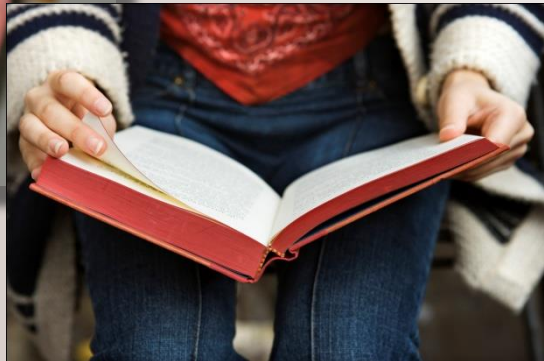
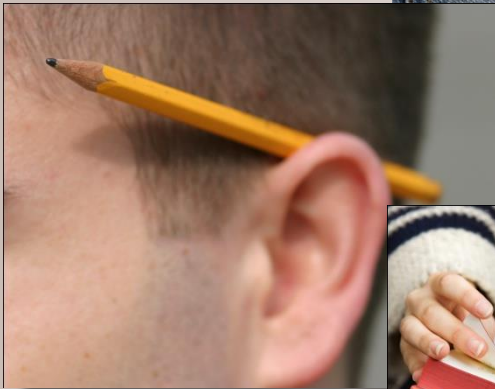
- On the next slide I will show a picture. Quickly count the living objects in this picture.





## Feel anything unusual?

Something you adjusted earlier?



## Sensory adaptation

Diminishing sensitivity to an unchanging stimulus.

- Benefit—freedom to focus on informative changes without uninformative background stimulation.
- We perceive the world not as it actually is, but as it is useful for us to perceive it.



Keep staring at the black dot. After a while the gray haze around it will appear to shrink.

