



# The Antabuse-Myth

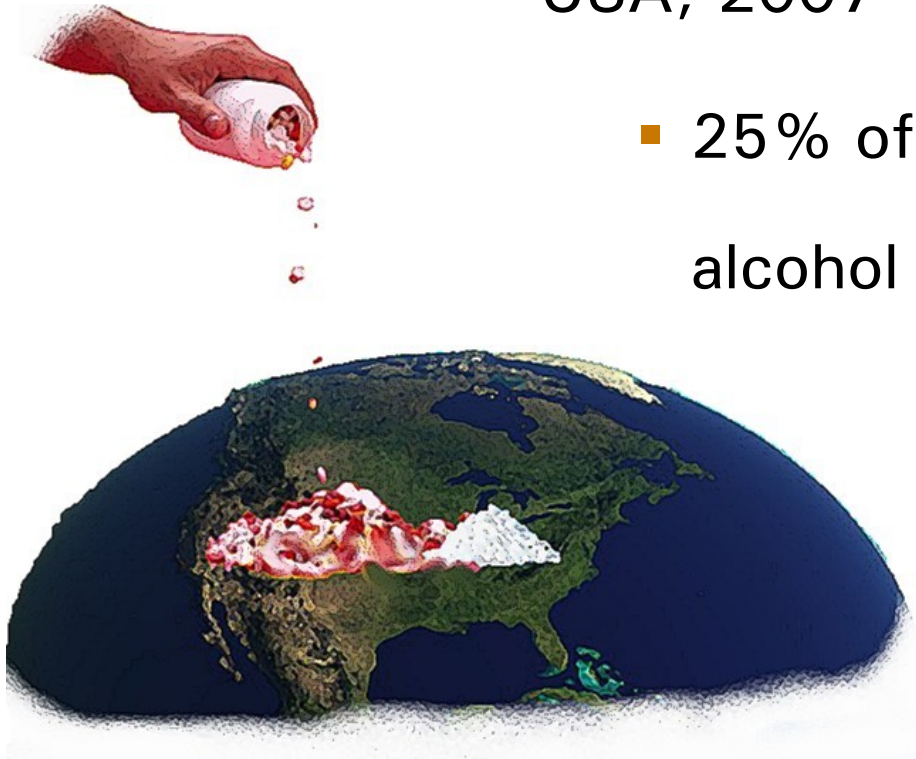
*Why disulfiram cannot work*

# Disulfiram prescriptions

Mark et al., 2009

USA, 2007

- 25% of patients treated for alcohol received disulfiram



# Side effects disulfiram



headaches



garlic-like taste



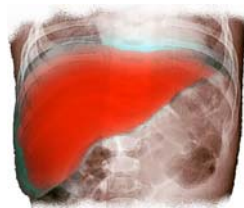
sexual  
problems



fatigue



Allergic  
dermatitis



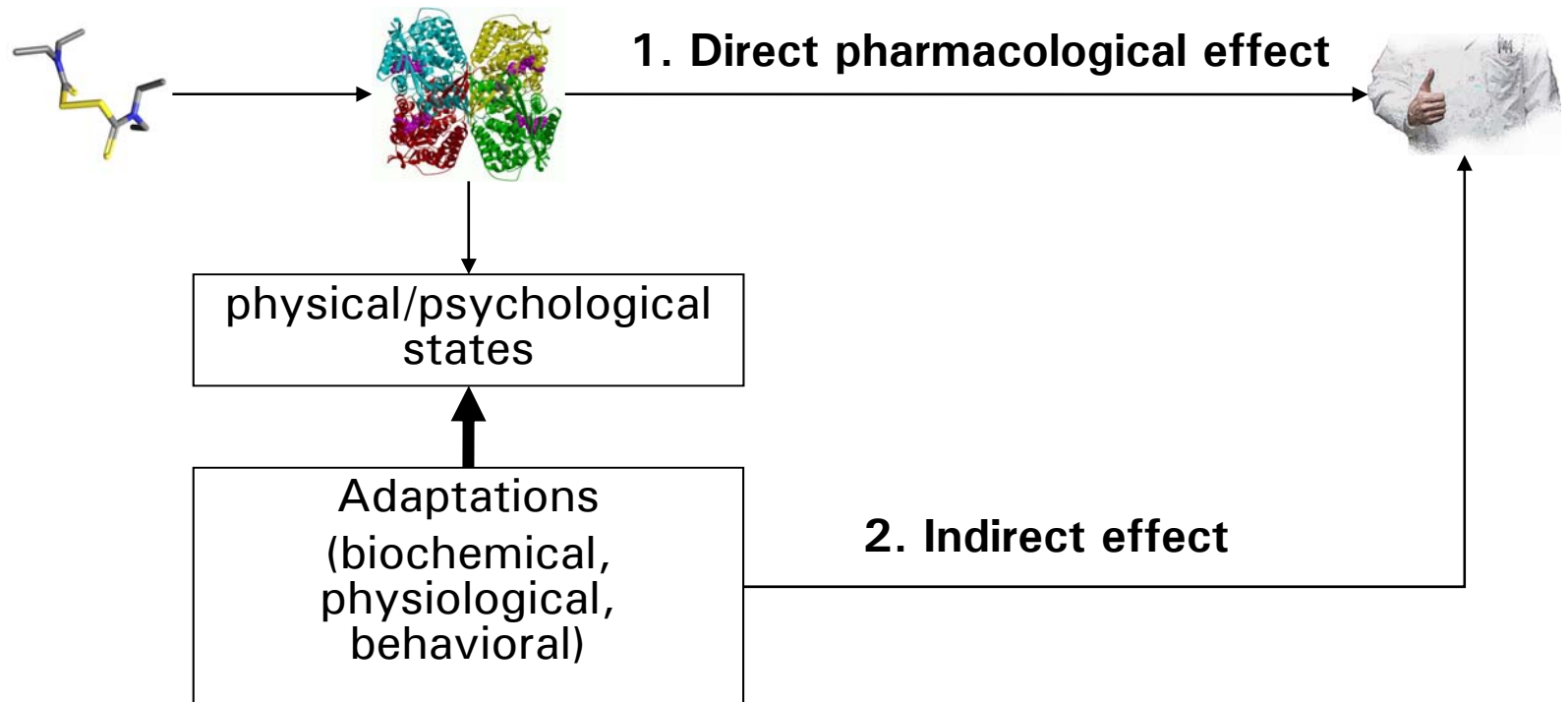
- Fatal toxic hepatitis
- 1 : 30 000 per treatment year

# Is disulfiram effective?



# Can disulfiram be effective?

# How can pharmacotherapy act?



# How can pharmacotherapy act?



# Practice Guidelines APA

*Controlled trials have not demonstrated any advantage of disulfiram over placebo in achieving total abstinence, delaying relapse, or improving employment status or social stability ...*

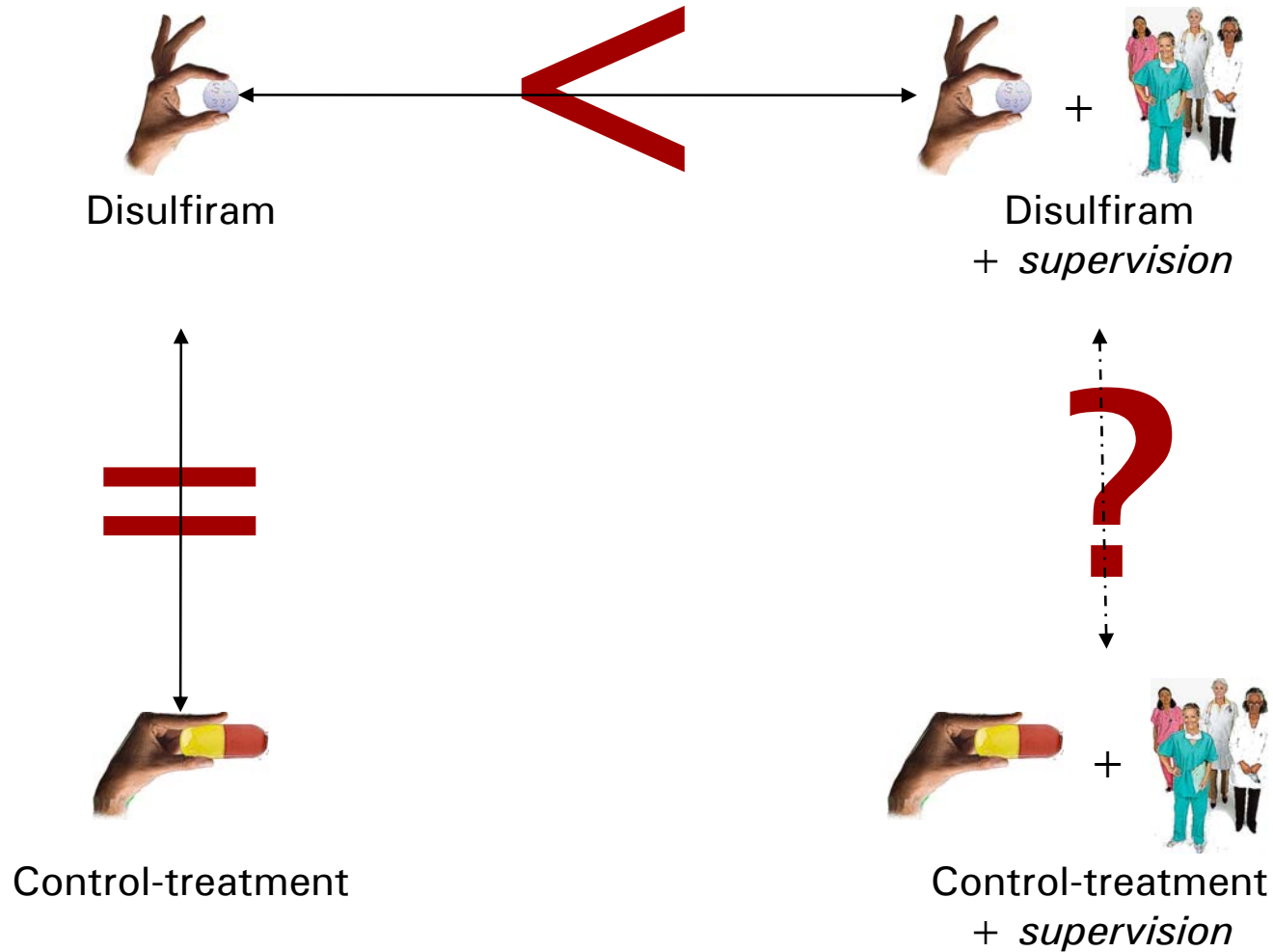


# Guidelines WFSBP

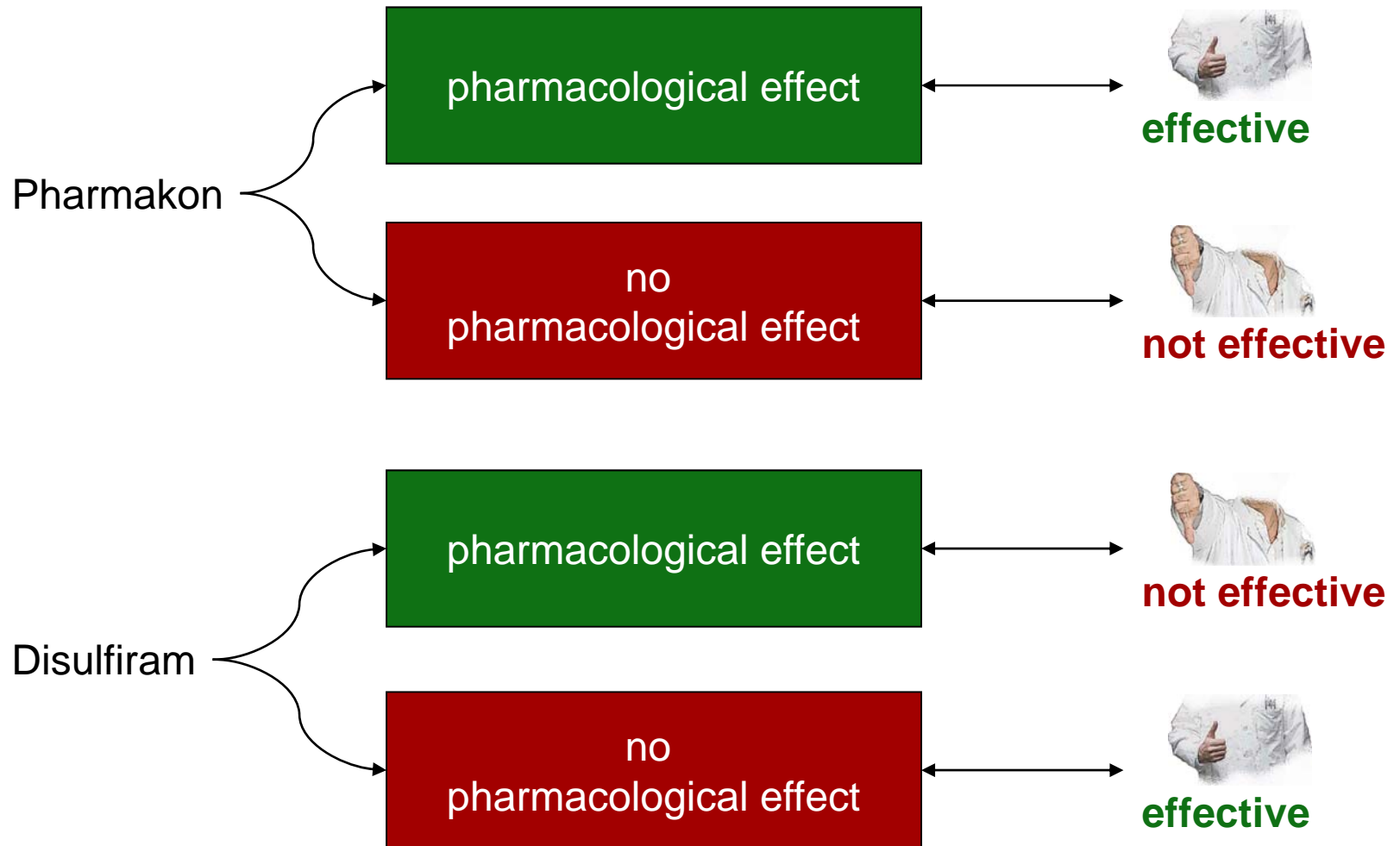
- *Data on the efficacy of disulfiram are mixed*
- *Compelling **evidence** that disulfiram increases abstinence rates is **lacking***
- *The efficacy evidence for disulfiram is inconsistent and ... there is **more often negative evidence** on other outcome measures such as relapse*



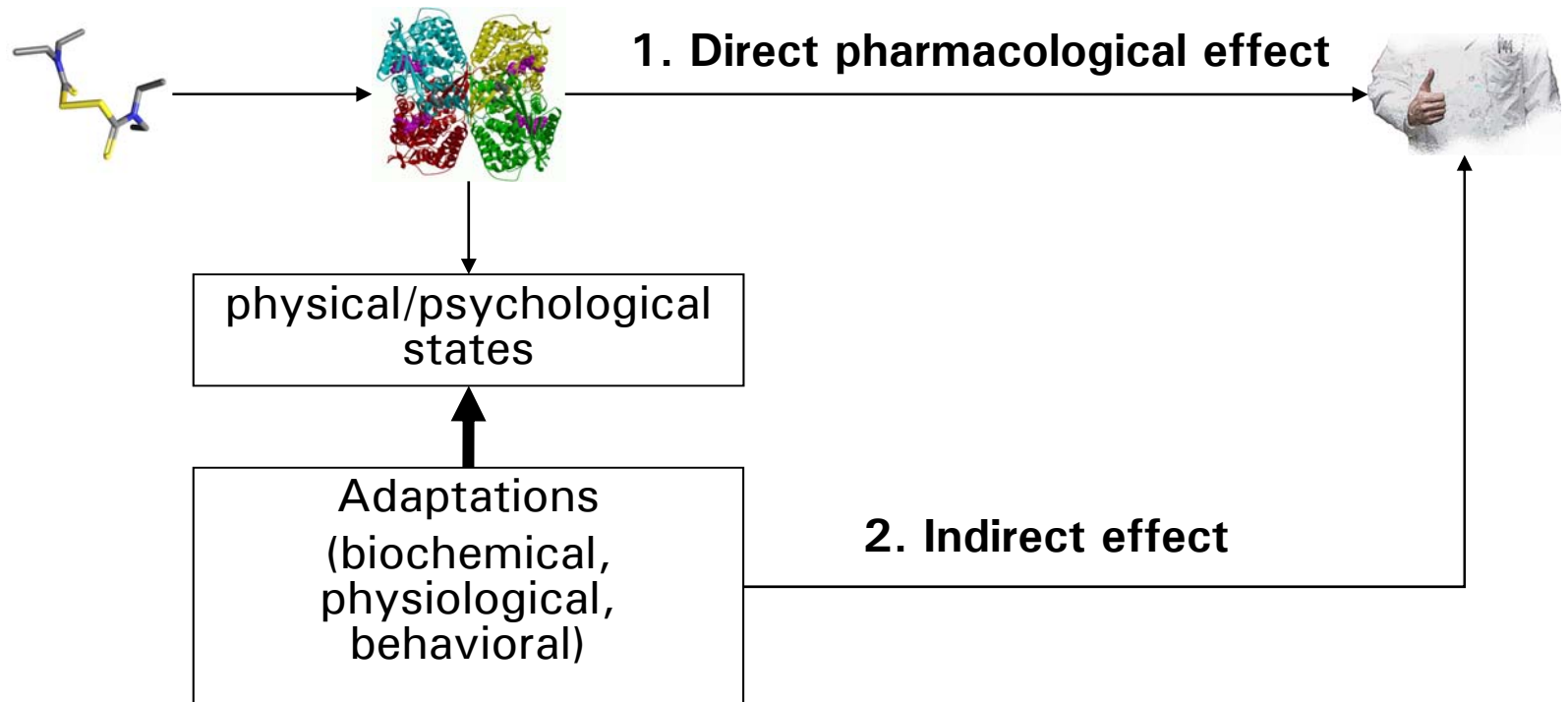
# The „Package-Hypothesis“



# The pharmacological anomaly



# How can pharmacotherapy act?



# Psychological hypotheses

- Conditioning
  - Classical
  - Instrumental
- Deterrence
- Cognitive trigger

# Psychological hypotheses

- **Conditioning**
  - **Classical**
  - **Instrumental**
- Deterrence
- Cognitive trigger



# Classical conditioning

Before conditioning



*Neutral stimulus*



During conditioning



+



After conditioning



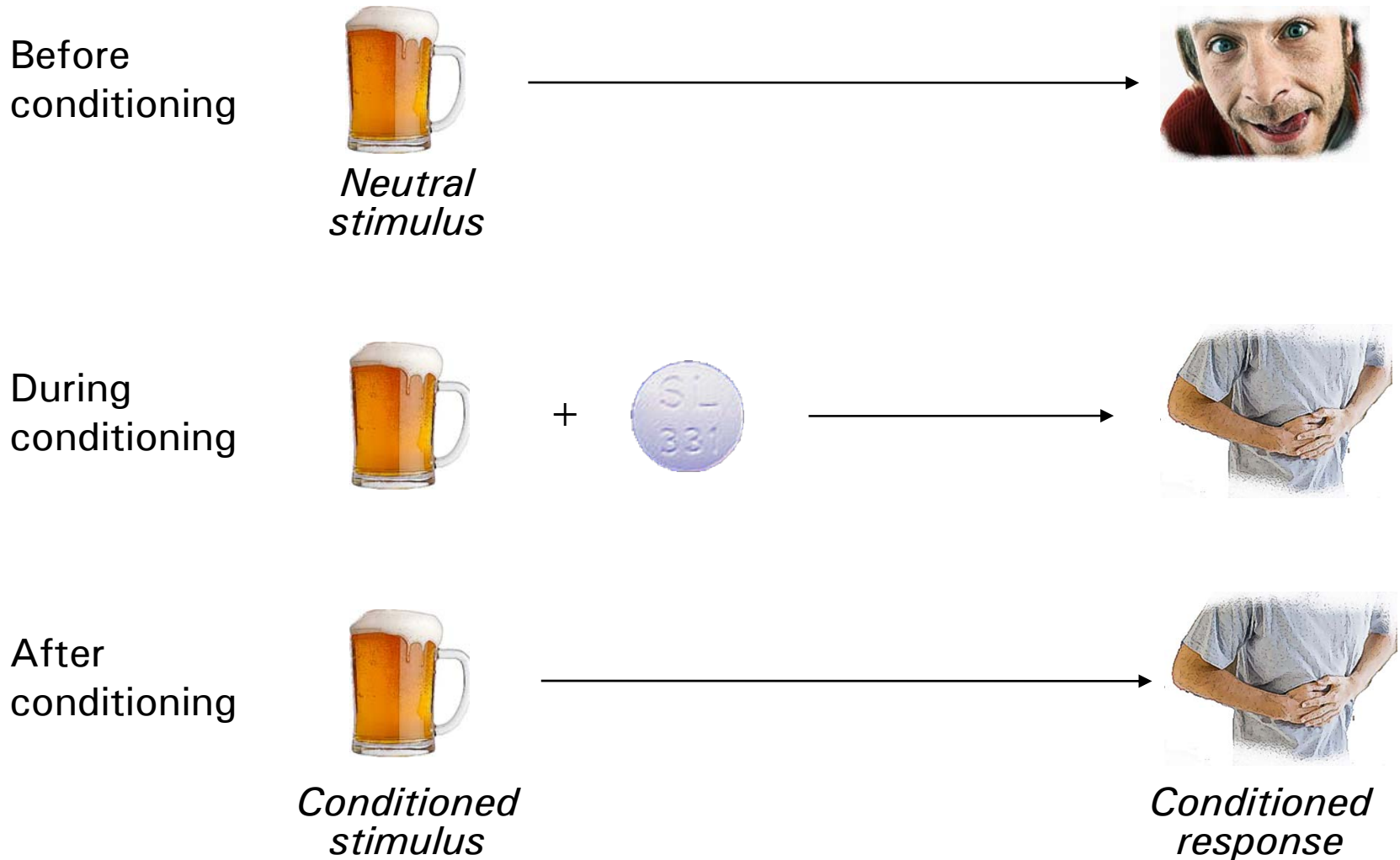
*Conditioned stimulus*



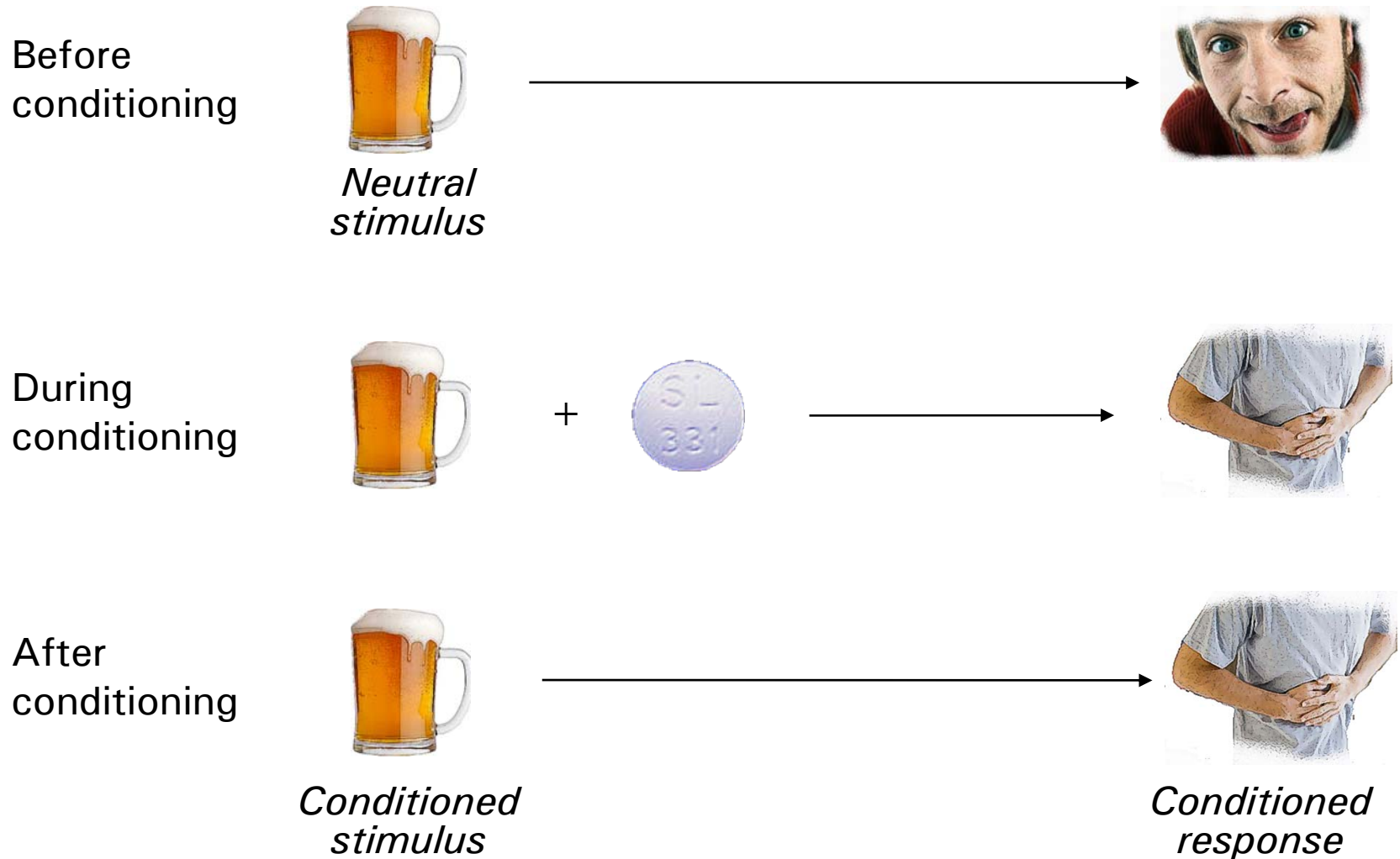
*Conditioned response*



# Classical conditioning



# How it is applied



# How it is applied

Before conditioning



*Neutral stimulus*



During conditioning



+



After conditioning



*Conditioned stimulus*



*Conditioned response*

When Pavlov's Dog Begs ...



London's Times

© 2003 Rick London and Rich D'esslin



CRAIG SWANSON © WWW.PERSPICUITY.COM

# Operant conditioning

- Association between **action** and unconditioned stimulus
- Investigates the learning of voluntary responses
- Reward or punishment

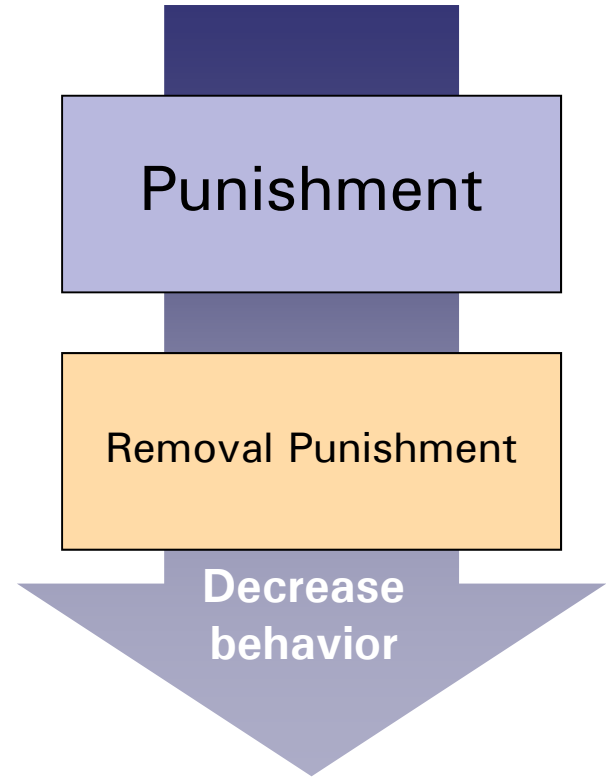
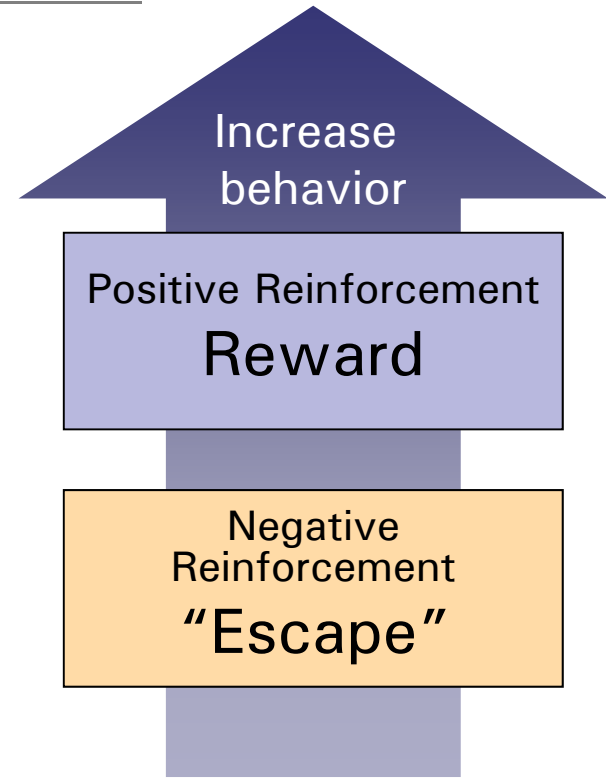
# Reinforcement vs punishment

+

Add stimulus

—

Subtract stimulus



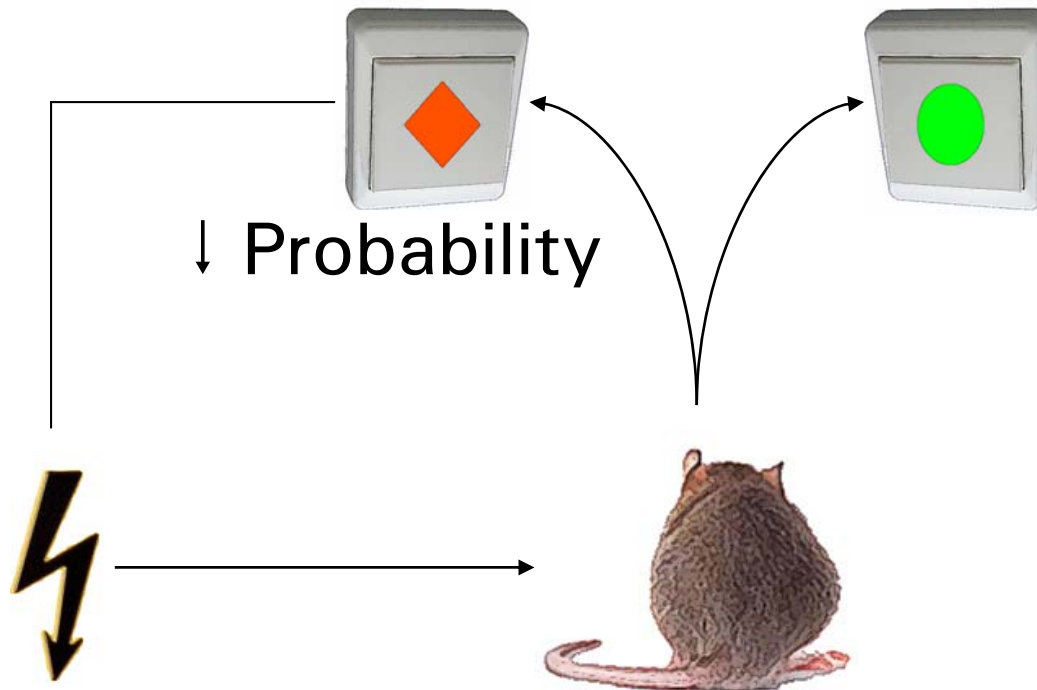


## Swiss Compendium (≈ Drugs@FDA)

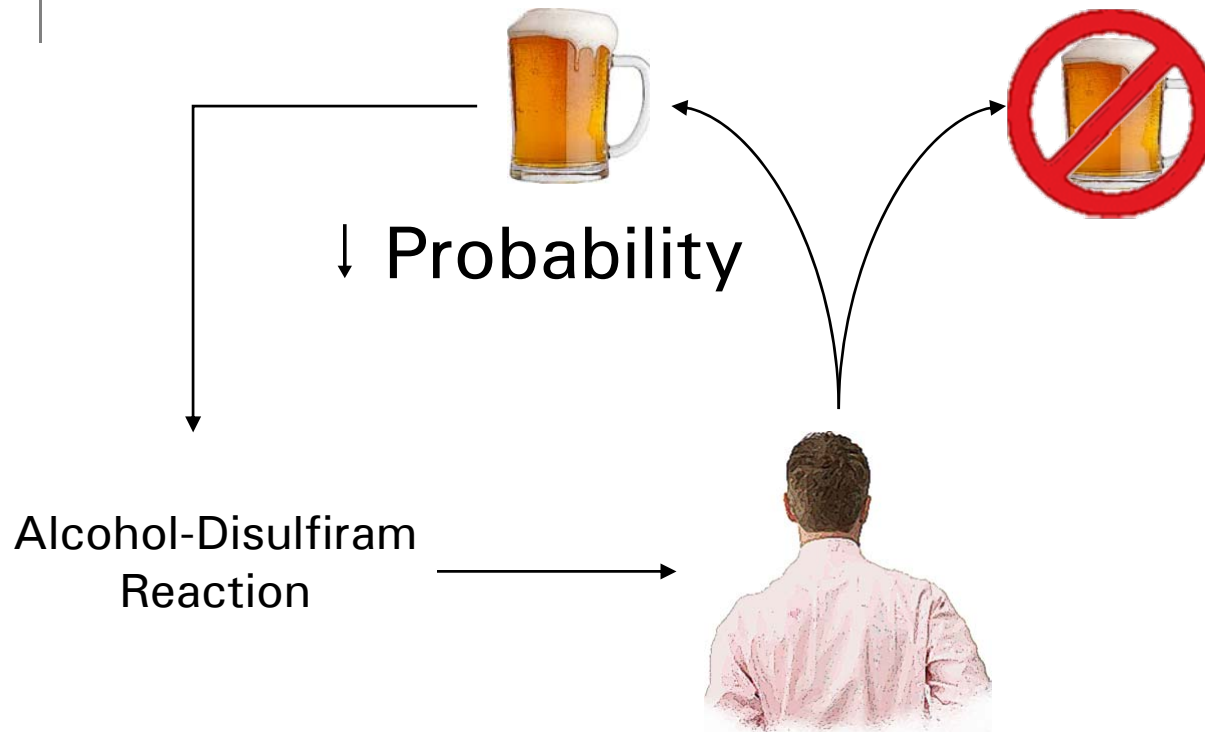


- ...reaction appears generally 5–10 minutes after ingestion of alcohol ...
- After having experienced such an episode, the patient will be reticent to consume alcohol again (aversion reaction).

# Operant conditioning by punishment



# Operant conditioning by punishment



# Which schedule for a good effect ?

Begin with continuous punition



Best for getting a new behavior started

Schedule of choice for punishment  
New behavior can extinguish quickly once reinforcement stops

Stabilize with intermittent punition



Quite resistant to extinction

Most reinforcers in human relationships are on a variable schedule

“Gamblers schedule”

# Psychological hypotheses

- Conditioning
  - Classical
  - Instrumental
- **Deterrence**
- Cognitive trigger

# Deterrence

- **Guidelines WFSBP:** *The rationale for using the medication is to deter the patient from drinking alcohol again*
- **APA guideline :** *The purpose of disulfirame is not to make the patient ill but to prevent the patient from drinking impulsively because he or she knows the symptoms that will result from drinking while taking disulfirame.*

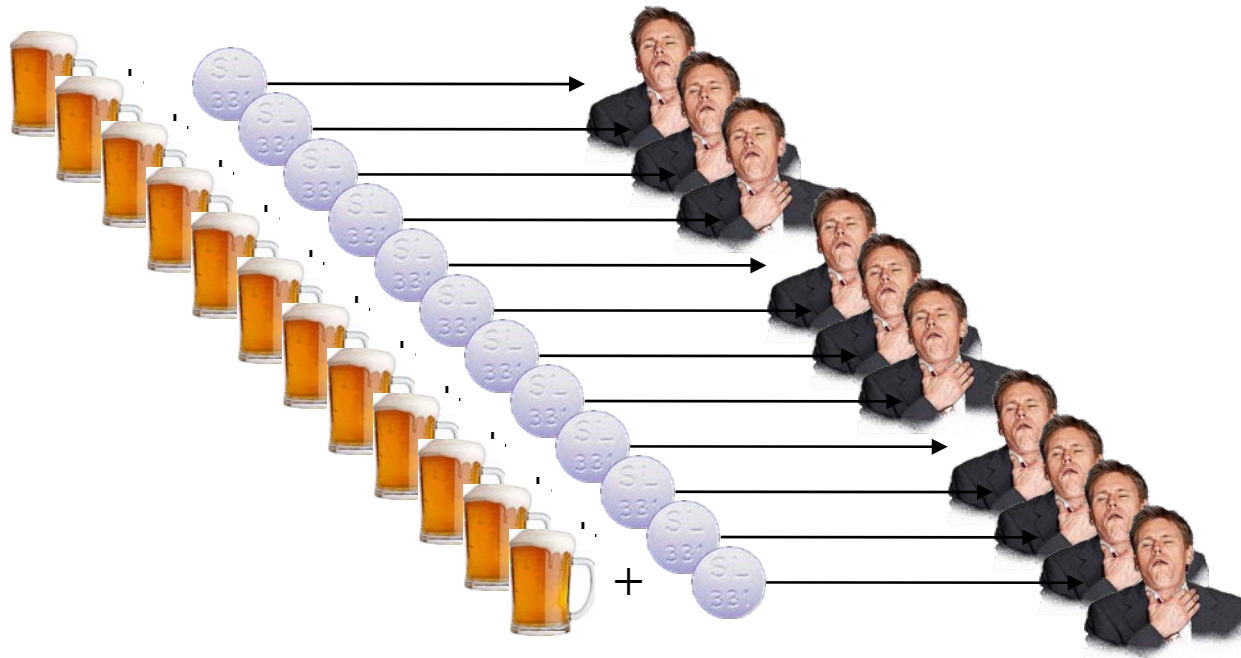
# Deterrence: factors

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- Certainty
- Severity
- Celerity



# Certainty



# Severity



Flushing



Headache



Hypotension



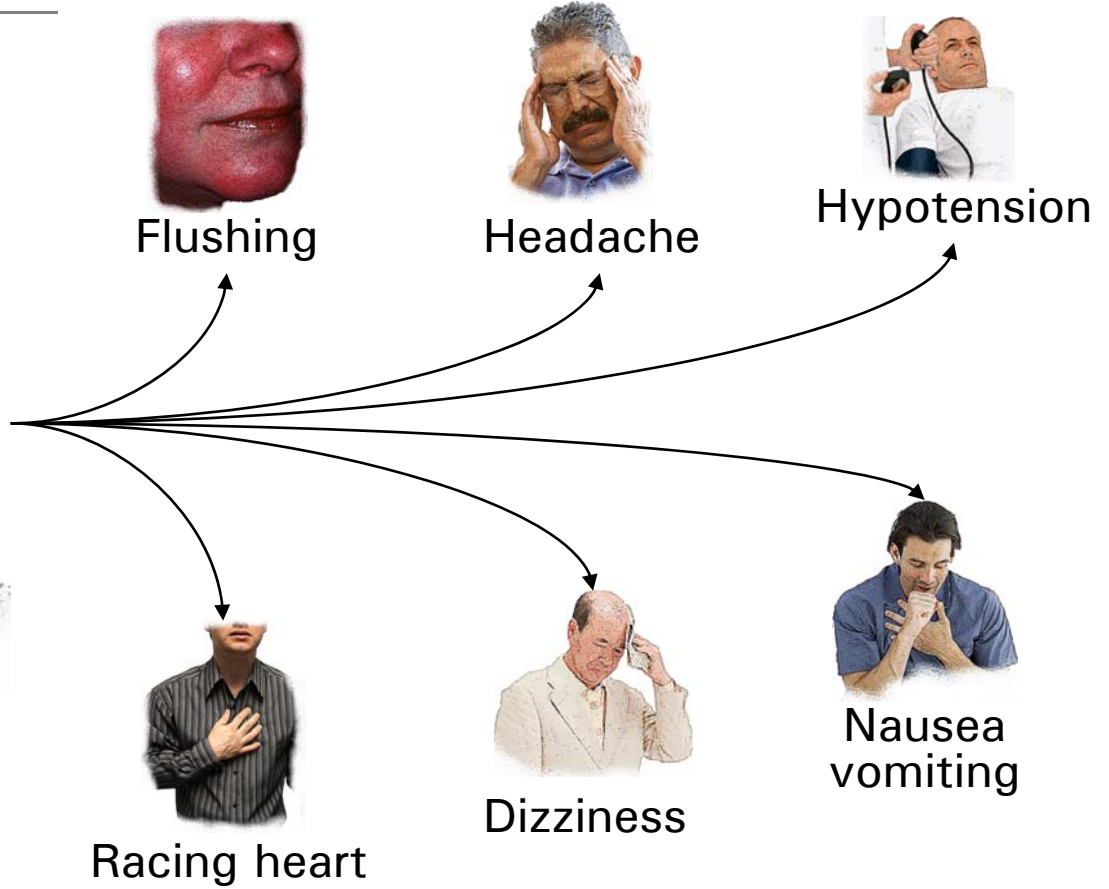
Racing heart



Dizziness



Nausea  
vomiting



# Celerity



# Deterrence: Assumptions

- Assumes rationality
- Behavior can be prevented through altering cost/  
benefit ratios

# Deterrence: who responds

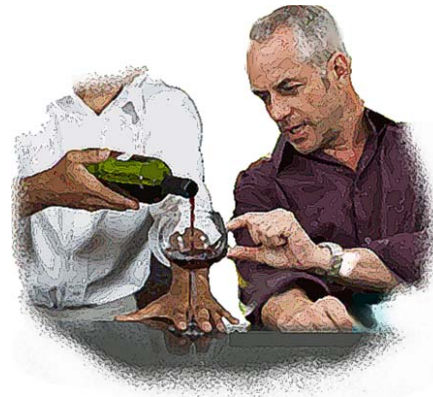


Sensible to  
deterrence



Not really sensible  
to deterrence

# Deterrence: who would respond



Sensible to  
deterrence



Not really sensible  
to deterrence

# Psychological hypotheses

- Conditioning
  - Classical
  - Instrumental
- Deterrence
- **Cognitive trigger**



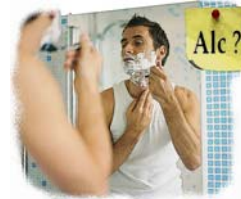
# Decision training

- Disulfiram as “cognitive trigger”



# Alternative decision trainings

Other cognitive triggers



Exposition training



Biofeedback



Behavioral contracting



# Conclusions

- Disulfiram as pharmacotherapy
  - Anomaly
- Classical or operational conditioning
  - Lack of training
- Deterrence
  - Addiction  $\leftrightarrow$  Irrationality concerning alcohol
- Conscience triggering
  - Alternatives without pharmacological risks

# Please avoid fallacious arguments



Proof by example-fallacy (cherry picking)

Appeal to ignorance



E.g. patients' demand



Argumentum ad populum



Argumentum ad verecundiam (Appeal to authority)



*Red herring fallacies*



# ISAM 14-18 Oct 2012, Geneva

