

# WHY

are we  
teaching research?

## Because...

- students have to write a thesis
- it's in our curriculum / standards
- our research guy left and someone has to do it
- ever better informed patients force osteopaths to be research savvy
- the EBM dominated health system demands evidence
- ...so we need to raise the research knowhow in the future profession
- we need to publish research to maintain/improve our status or funding
- .....others ?

## Why students learn research – 2 types of motivation

### Reward



seeking pleasure

### Punishment



avoiding pain

## Human Drives

1st Drive

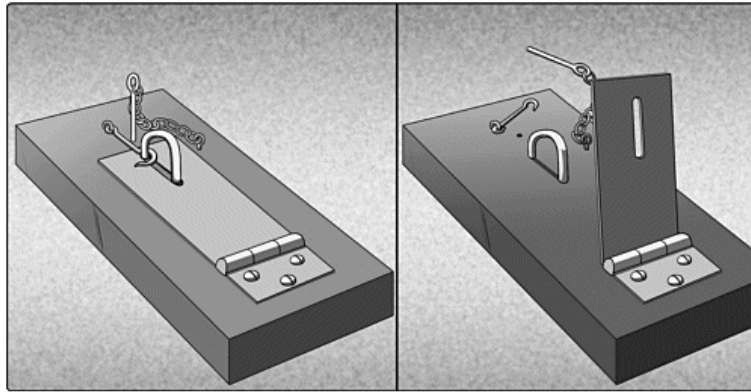
- survival, procreation

2nd Drive

- reward or punishment from the environment

## Research on Motivation

### Harlow's monkeys (1949)



Harlow HF, et al.: Learning motivated by a manipulation drive,  
Journal of experimental psychology 40 (1950)

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## Human Drives

*according to Harlow*

1st Drive

- survival, procreation

2nd Drive

- reward or punishment from the environment

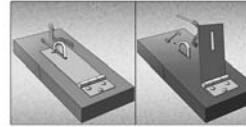
3rd Drive

- the task is its own reward
- intrinsic reward
- enjoyment of the process

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## Research on Motivation

### Harlow's monkeys (1949)



- monkeys started solving the puzzle themselves
- repeatedly without being trained and
- without reward
- after being rewarded:
  - **more errors**
  - **solving the puzzle LESS frequently**

Harlow HF, et al.: Learning motivated by a manipulation drive,  
Journal of experimental psychology 40 (1950)

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## Extrinsic vs. Intrinsic Motivation

### Deci's students (1969)



- Extrinsic rewards can have a negative impact on intrinsic motivation.
- Two groups of college students play with a puzzle called Soma. One group of students was paid for each puzzle they solved; the other wasn't.
- **the group that was paid to solve puzzles stopped solving puzzles as soon as the experiment—and the payment—ended.**
- **the group that wasn't paid kept solving the puzzles even after the experiment was over. They had found the puzzles intrinsically interesting.**

Deci EL.: Effects of externally mediated rewards on intrinsic motivation,  
Journal of personality and social psychology 18 (1971)

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## Extrinsic vs. Intrinsic Motivation

### Deci's meta-analysis (1999)

„Careful consideration of reward effects reported in 128 experiments leads to the conclusion that **tangible rewards tend to have a substantially negative effect on intrinsic motivation.**“

Nevertheless there are findings that seem to contradict or modify Deci's hypothesis.

Deci EL. et al: "A Meta-Analytic Review of Experiments Examining the Effects of Extrinsic Rewards on Intrinsic Motivation," *Psychological Bulletin* 125, no. 6(999): 659 .

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## Intrinsic Motivation

### Examples

- fascination with the subject, a sense of calling to it
- a sense of its relevance to life / the world
- a sense of accomplishment in mastering it

### Advantages

- can be long lasting and self sustaining
- one usually focuses on the subject rather than a reward

### Disadvantages

- more difficult to use, requires more knowledge about the students
- can be slow to affect behavior
- can require special and lengthy preparation
- a variety of approaches may be needed to motivate different students
- lecturers must be interested in the subject

Matt DeLong and Dale Winter, *Learning to Teaching and Teaching to Learn Mathematics: Resources for Professional Development*, Mathematical Association of America, 2002

# Students' motivation

## Reward



seeking pleasure

## Punishment



avoiding pain

**Extrinsic motivation**

OSeAN  
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# Extrinsic Motivation

## Examples

- grades, parental expectations, earning potential of a course of study

## Advantages

- works well for **clearly defined "algorithmic" tasks**
- doesn't require much knowledge about the student
- can lead to fast results

## Disadvantages

- does not work well for **complex tasks or creativity**
- can often distract students from learning the subject in depth
- can be difficult to offer an appropriate reward
- rewards should be changed and upgraded over time

Matt DeLong and Dale Winter, *Learning to Teach and Teaching to Learn Mathematics: Resources for Professional Development*, Mathematical Association of America, 2002

# Strategies for nurturing intrinsic motivation

Novelty	"There is so much more to discover in osteopathy!"
Utility	"This next topic is something that we'll use again and again. It contains valuable ideas that we'll use throughout the later sections of the course."
Applicability	"This is a skill you'll need with your patients on a daily basis."
Anticipation	"As you read through, ask yourself what this section of work is hinting at as the next logical step."
Surprise	"We've used X in a lot of different ways. If you thought you'd seen them all, just wait for the next assignment."
Challenge	"Who's up for a challenge? Isn't there any of your lecturers you'd like to prove wrong?"
Feedback	"When you try this, you'll find out whether you really understood yesterday's lesson."
Closure	"A lot of you have asked me about X. Well, finally we're going to find out why that's so."

based on: DeLong M and Winter D: Learning to Teaching and Teaching to Learn Mathematics: Resources for Professional Development, Mathematical Association of America, 2002

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"Fall in love with some activity, and do it! Nobody ever figures out what life is all about, and it doesn't matter. Explore the world - nearly everything is really interesting if you go into it deeply enough. Work as hard and as much as you want to on the things you like to do the best. Don't think about what you want to be, but what you want to do. Keep up some kind of a minimum with other things so that society doesn't stop you from doing anything at all."

Richard P. Feynman

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**[Science] is like sex -  
it has practical applications,  
but that's not why we do it.**

**Richard P. Feynman**

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