

# A Research Mindset

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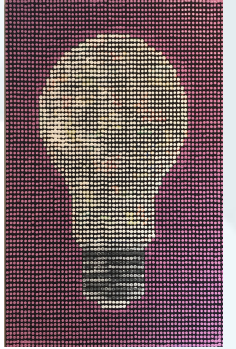
# Defining A Research Mindset

# A Research Mindset

1. Examine and counter my biases
2. Learn to innovate technically
3. Learn from failures & creating emotional resilience

# Concepts

- Cognitive bias, curiosity, and creativity
- Flexible optimism for perseverance
- Growth Mindset



# Part 1

## Dealing with Bias



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# Bias

A **cognitive bias** is a pattern judgment, which humans need to function and ***at the same time*** leads to illogical conclusions

Bias arises from various processes and are difficult to distinguish

- use of information-processing shortcuts (heuristics, generalizations)
- mental noise
- the mind's limited information processing capacity
- emotional and moral motivations
- social influence
- lack of curiosity

# Example Biases

Stereotypes

Survivor

Anchoring

Confirmation

Exposure & Recency

Attention (repetition)

Conservative (Bayesian)

Gamblers' fallacy

Authority

Bandwagon

Dunning-Kruger effect  
newbies overestimate, experts underestimate

Framing

Von Restorff effect  
remember surprises

Curse of Knowledge

Congruence (one hypothesis)



# Example Biases

Stereotypes

Survivor

Anchoring

Conservative (Bayesian)

Gamblers' fallacy

Authority

**CREATIVE THINKING  
"OUTSIDE THE BIAS BOX"**

Framing

Von Restorff effect remember surprises

Curse of Knowledge

Congruence (one hypothesis)

newbies  
underestimate

# Example Biases

Stereotypes

Survivor

Anchoring

Authority

**CREATIVE THINKING**  
**“OUTSIDE THE BIAS BOX”**

**Slow Down, Be Curious,**  
**Examine your Biases**

Consequence

Gain

Force (one hypothesis)

ises

# Part 2

## Learn to Innovate Technically

# Easier to Innovate if:

1. You can identify the need for it
2. You ask WHY
3. You are good at asking WHY and answering
4. You love what you do

Examples!

# Part 3

## Dealing with Failures + Cultivating Resilience



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# Real Life is Unpredictable

World events  
Local events  
Family & Friends  
Relationships  
Health

good / bad

# Research Events Are Predictable

Have ideas	good / bad
Work on ideas	succeed / fail
Discuss ideas informally	well / poorly
Write up ideas	well / poorly
Submit paper	accept / reject
Give talk / teach class	well / poorly
Receive feedback	positive / negative
Receive structured feedback	positive / negative

# Exercise I



# Exercise I

Write down how you did or would interpret these events

1. Permanence (time & space)
2. Personalization (you or not you)
  - I. Your paper gets **accepted**
  - II. Your paper gets **rejected**



# Keeping Positive

- learn and execute strategies to overcome failures and obstacles
- learn and execute emotional resiliency strategies to manage myself in times of stress and failures

# Optimism vs. Pessimism

- **Optimists** believe bad events are temporary setbacks, single events, not my fault, and can be countered with action
- **Pessimists** believe bad events are permanent, my fault, but not under my control. Leads to inaction.
- Optimism can be learned!
- Optimism is a bit of a biased view of reality
- Optimism is not always better than pessimism.

# Explanatory Style

1. Permanence (time and space)
2. Personalization (you or not you)

# Permanence (time & space)

## Optimistic

Good events have permanent general causes

Bad events have temporary causes / specific to situation

## Pessimistic

Good events have temporary causes

Bad events have permanent causes / specific to situation

# Personalization

## Optimistic

Good events caused by me & other factors

Bad events caused by circumstances, luck, others

## Pessimistic

Good events by circumstances, luck, others

Bad events caused by me

# Revisiting the Research Mindset

# Fixed versus Growth Mindset

## Fixed Mindset

I am smart or not

I am athletic or not

I am empathetic or not ... etc.

Success is because I am X

Failure is because I am not X or I am not X enough

## Growth Mindset

If I work at it, I can learn X

Curious



# Research Mindset for Research Life Events

## I will

1. Counter my biases
2. Learn & innovate technically
3. Learn from failures & Learn emotional resilience

Have ideas

Work on ideas

Discuss ideas informally

Write up ideas

Submit/re-submit paper

Give talk / teach class

Receive verbal feedback

Receive formal evaluation

# Exercise II

# Exercise II

Review answers with partner. What was your mindset?

1. Permanence (time & space)
2. Personalization (you or not you)
  - I. Your paper gets **accepted**
  - II. Your paper gets **rejected**



# Concluding Thoughts & Resources

# Soha's Mindset / Strategies

1. For bias
  - Slow down to understand gaps
  - Look at things from different angles
2. For research setbacks
  - Set it aside for a while
  - Process failures, don't ignore them, and be kind to yourself
3. Emotional resilience
  - Understand what is important to me
  - Keep track of priorities and context
  - Surround yourself with great people
4. For creativity
  - Declutter. Clean slate.
  - Strive for 20% of time that is set for creative work on weekly basis: write, review, think.

# Kathryn's Mindset / Strategies

1. For bias
  - Look ahead of the bandwagon
  - Classic problems never go out of style, they just have new contexts
2. For research setbacks
  - Don't wait for external feedback, self identify problems
  - Limit feeling sad to X days, then consciously channel sad to response
  - Synthesize feedback to adjust strategy
  - Strategize with collaborators, ask advice more broadly
3. For managing my emotions
  - Daily exercise, sleep, fruits & veggies, family time
4. For creativity
  - Create unscheduled work time
  - Read a lot and critically; what did they forget? logical next 4 steps/papers?

## Acknowledgements

- Inspired by Professor Samuel Kounev's course notes
- Professor Lori Pollock

## Resources

- Carol Dwick, "Mindset: The New Psychology of Success"
- Martin Seligman, Learned Optimism, [Questionnaire](#)
- Daniel Kahneman, "Fast versus Slow Thinking"
- Implicit Bias Testing, <https://implicit.harvard.edu/>
- Olivia Goldhill, "The World is Relying on a Flawed Psychological test to Fight Racism"

# Discussion & Questions

# Pessimists

Believe bad events / misfortune

1. will last a long time
2. will undermine everything they do
3. are their own fault

**Pessimistic explanatory style produces passiveness from believing action is futile**



# Optimists

Believe bad events / misfortune

1. is a temporary set back
2. is limited to this one event
3. is not my fault, other people, circumstances, bad luck

**Optimistic explanatory style produces action, trying harder, particularly after a defeat or under pressure or given a challenge**

# Reflection & Discussion

Write down

1. Was overcoming bias a factor in your creativity?
2. Are other circumstances holding you back?  
For example, spending time doing what you know (homework) versus new skills (research, writing)



# Homework II

pick a positive and negative event where your responses tend to pessimism and work to make them more optimistic

Have ideas	good / bad
Work on ideas	succeed / fail
Discuss ideas informally	well / poorly
Write up ideas	well / poorly
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Receive formal evaluation	positive / negative

# Reflection

Write down

1. A recent creative idea
2. What were the circumstances (when, where, why, etc.)?
3. Circumstances under which you feel least creative



# Reflection & Discussion

Write down

1. A recent *positive* event
2. Your feelings about what contributed most to that event



# Reflection & Discussion

Write down

1. A recent *negative* event
2. Your feelings about what contributed most to that event



# Reflect on

Your paper gets **accepted**

Your paper gets **rejected**

1. Permanence (time)
2. Pervasiveness (space)
3. Personalization (you or not you)



# Easier to Innovate if:

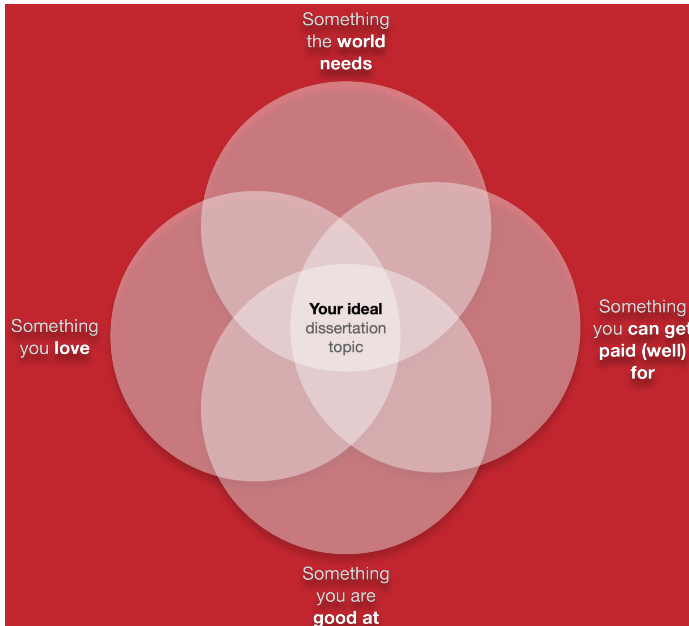
1. You can identify the need for it
2. You ask WHY
3. You are good at asking WHY and answering
4. You love what you do

You can create happiness and impact where these 4 items meet — “Ikigai”





# What is *Your* Ikigai?



*Ikigai* (ee-key-guy) is a Japanese concept that combines the terms *iki*, meaning “alive” or “life,” and *gai*, meaning “benefit” or “worth.”

When combined, these terms mean that which gives your life worth, meaning, or purpose.

Ikigai is similar to the French term “raison d’être” or “reason for being.”



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# Delusions

- It is never your fault
- Optimism is always positive and desired in all situations
- Optimistic people face less failures overall in their work
- Optimism is a character trait and cannot be learned
- Success favors the most talented

# Flexible optimism

- Success needs both optimism and occasionally some pessimism
- Success does not always favor the most talented, but rather the adequately talented that are also optimists!