

# BeatDelay

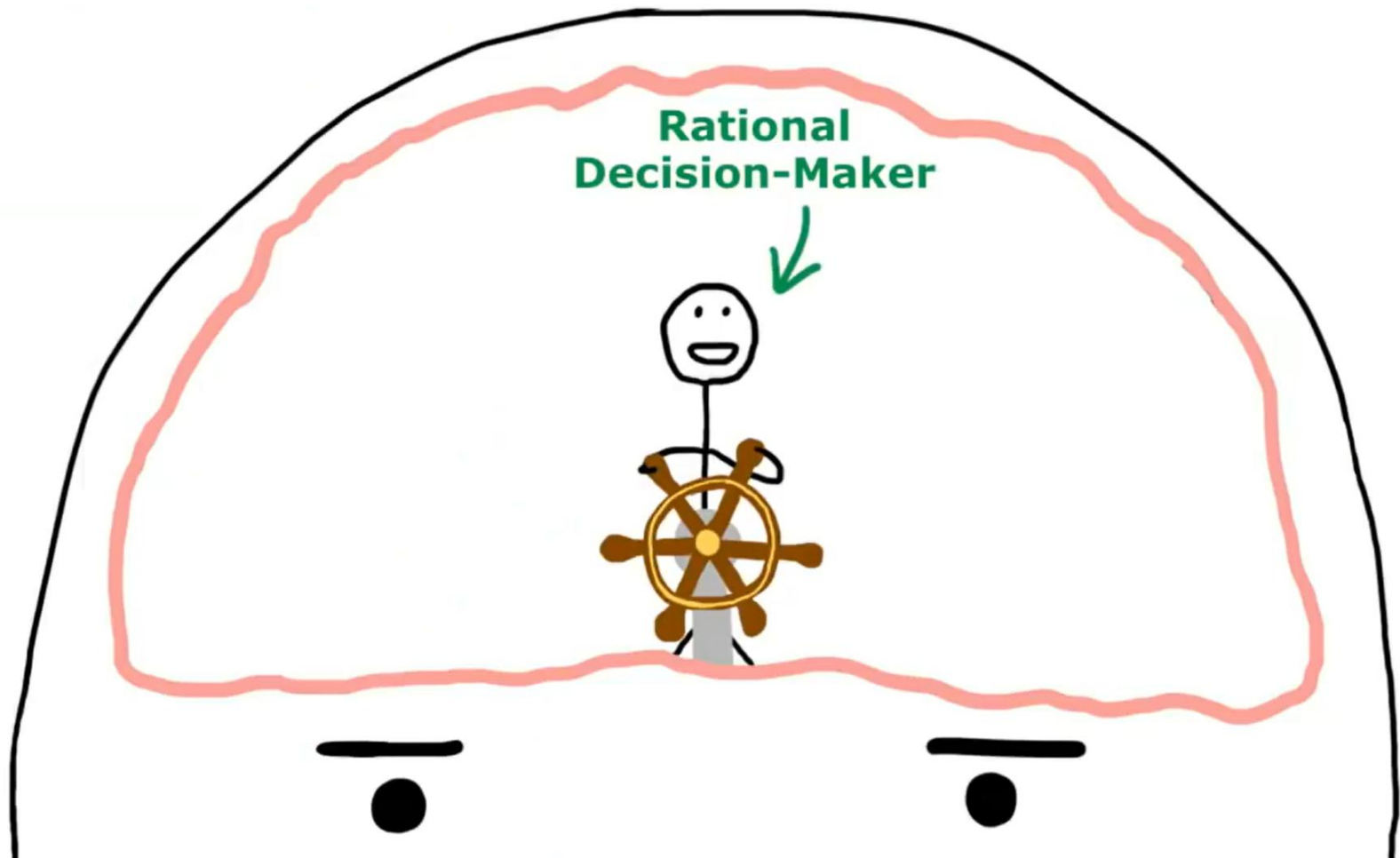
Cognition-Behavior Training Programme for Procrastination

Behavior Modification

Xin Hao

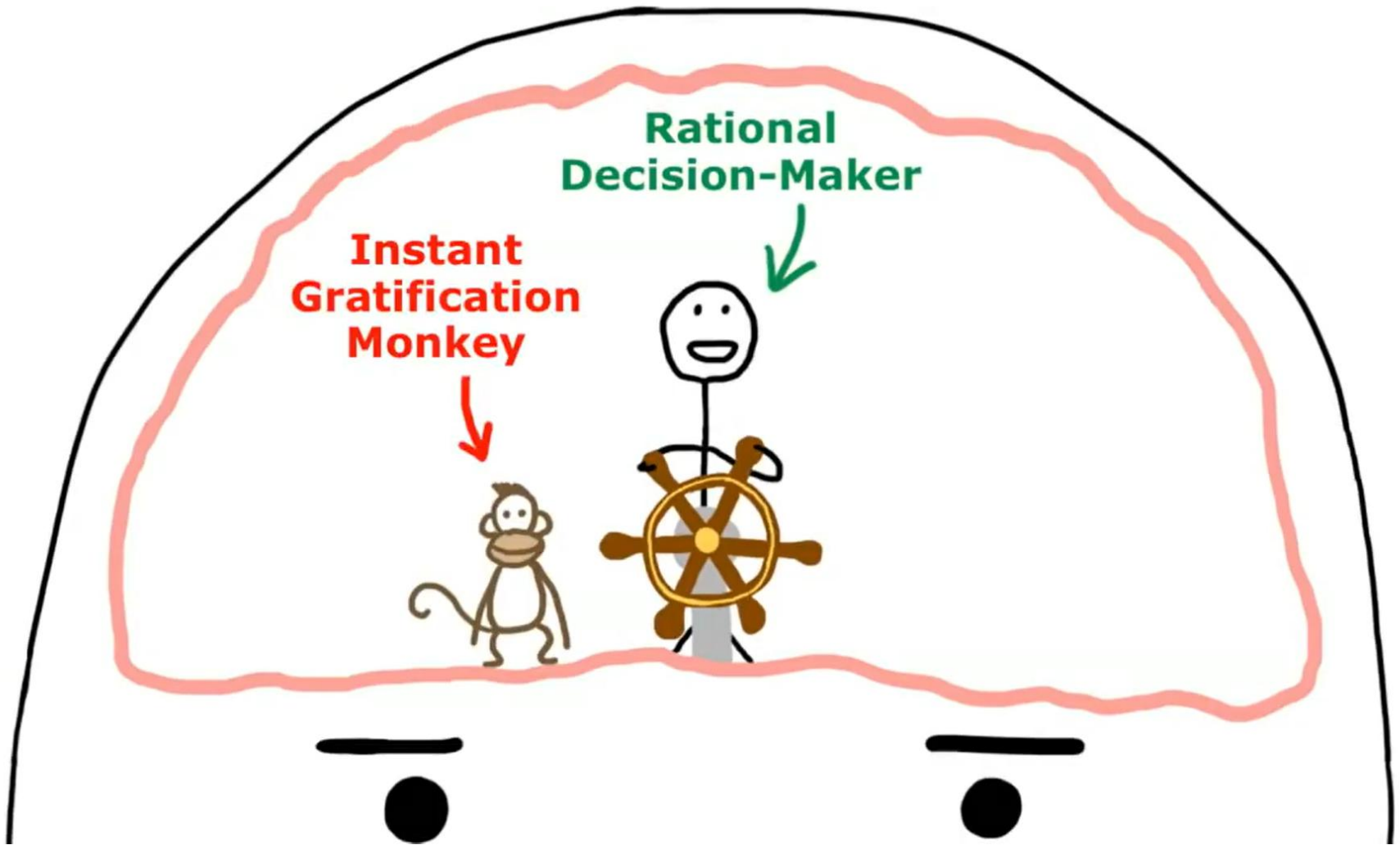
haox8023@163.com

# Procrastination



*Tim Urban, 2016, TED Talk*

# Procrastination



*Tim Urban, 2016, TED Talk*

# Procrastination



*Tim Urban, 2016, TED Talk*

# Procrastination

## Procrastination:

- ☆ People voluntarily delay starting or completing a planned task despite foreseeing adverse consequences.

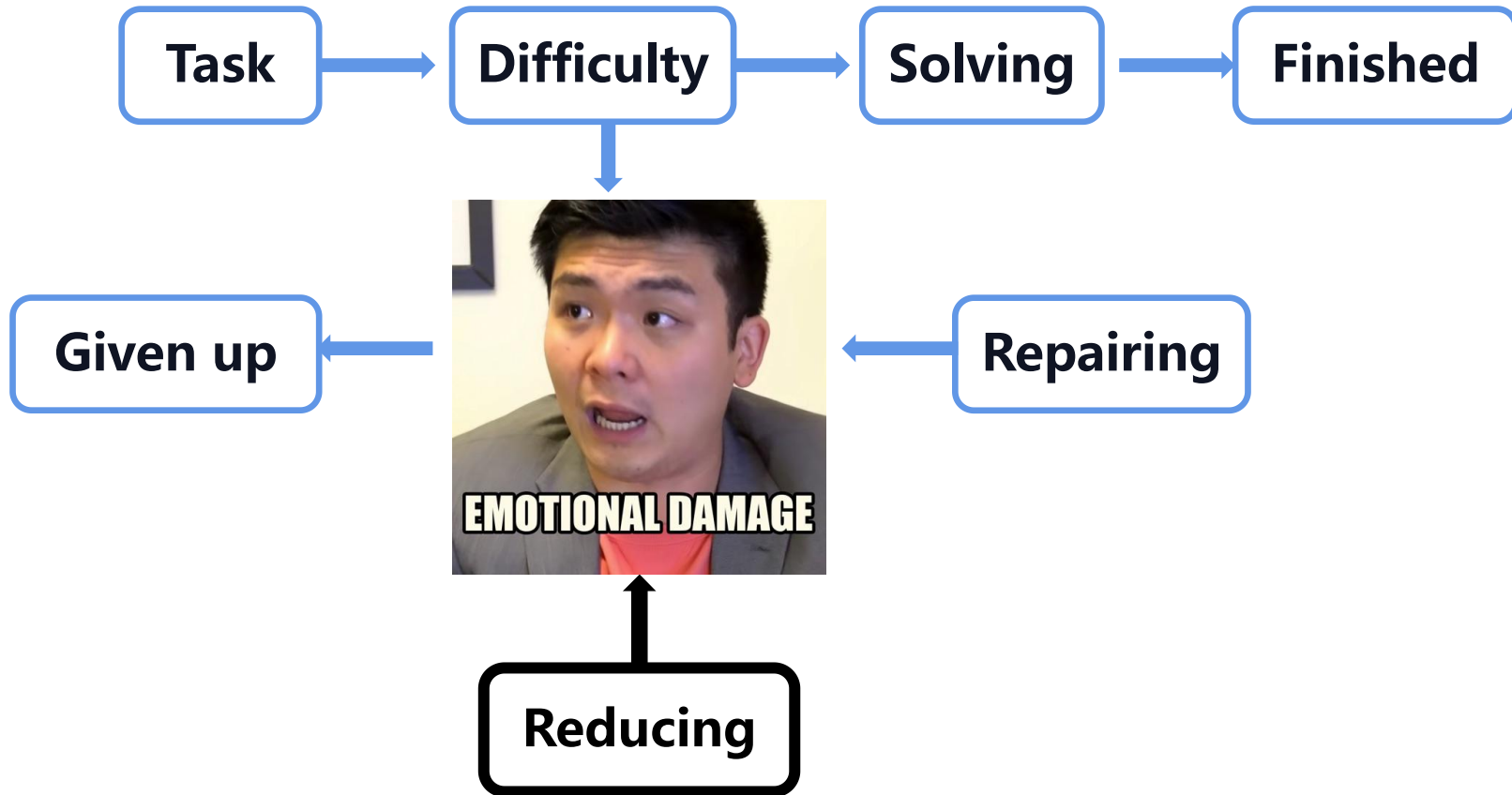
*Steel, 2007, Psychological Bulletin*

Why ? ? ?



# Theory

## Short-term Mood Repair Theory, SMRT



*Sirois & Pychyl, 2013, Social and Personality Psy Compass*

## Temporal Motivation Theory, TMT

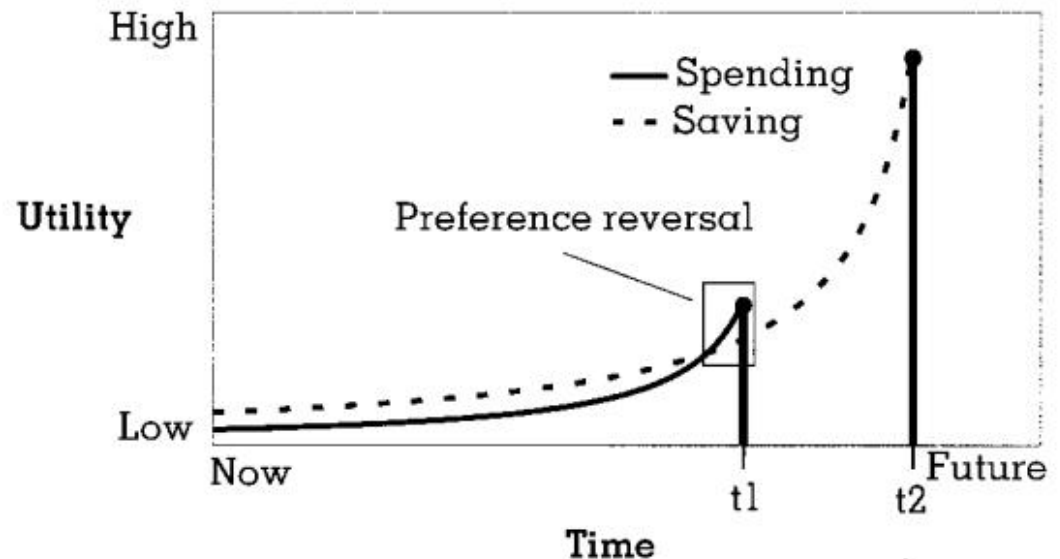
$$Utility = \frac{E \times V}{\Gamma D}$$

$E$ : Expectancy

$V$ : Value of Task

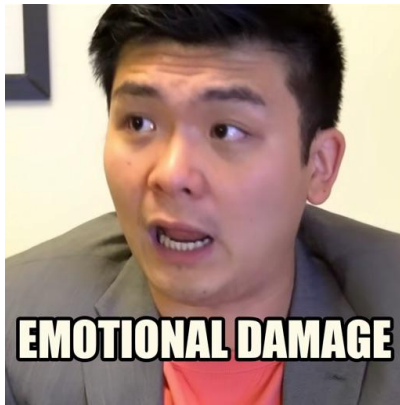
$\Gamma$ : Subject's sensitivity to delay

$D$ :  $T - t$ , The reward in terms of *time reward* minus *time now*



*Steel & König, 2006, Academy of Management Rev*

## Short-term Mood Repair Theory, SMRT



**It's difficult to get down to or  
persist in doing.....**

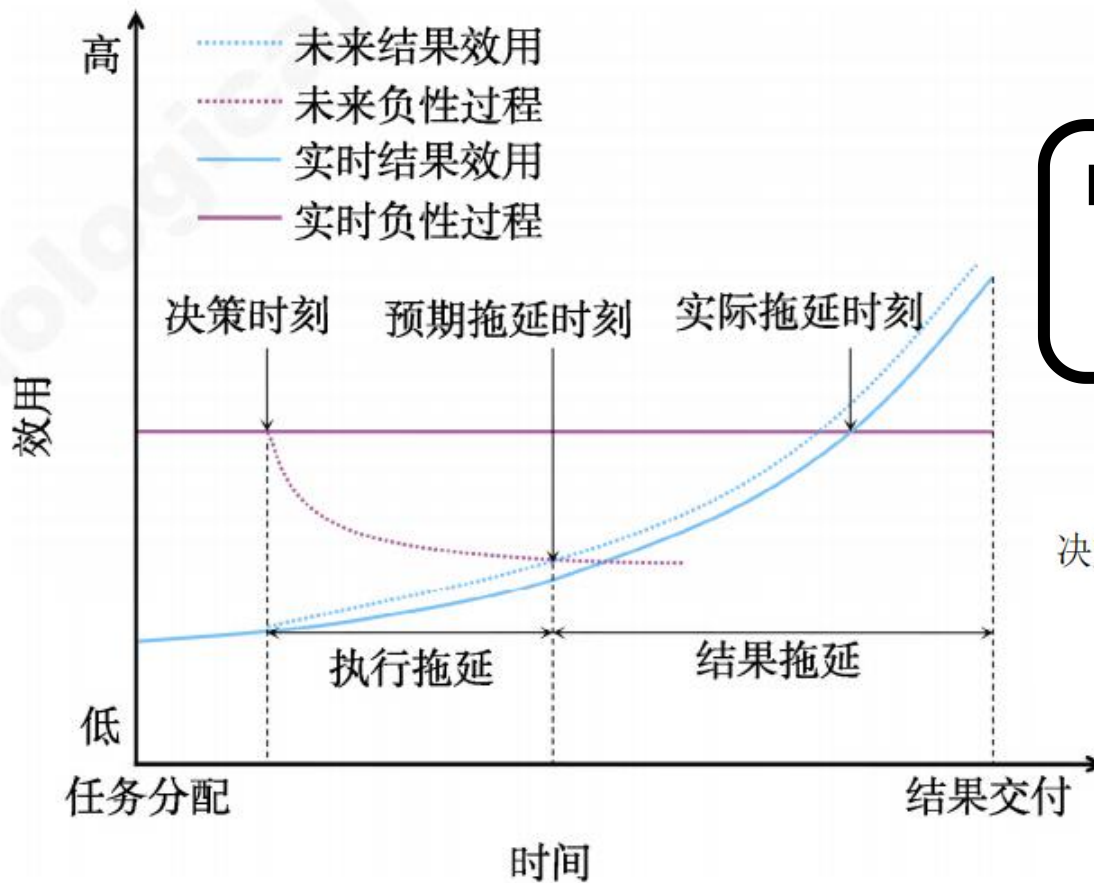
## Temporal Motivation Theory, TMT

$$Utility = \frac{E \times V}{I \times D}$$

**It's desperate to get it done.....  
(Carry-over or Tail-raising)**



## Time Decision Model of procrastination, TDM



**Positive Consequences  
vs.  
Negative Processes**

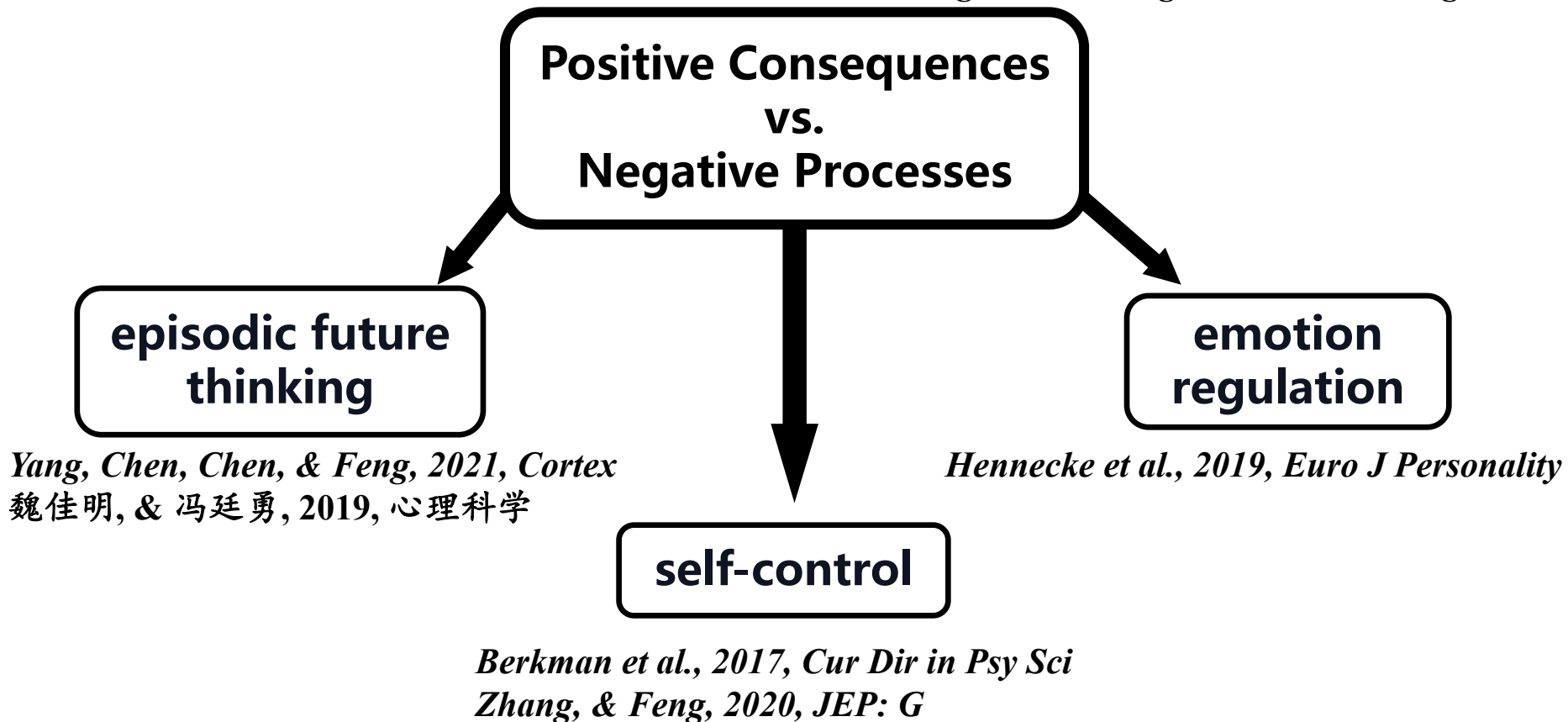
$$\text{决定} = \frac{E_{\text{执行}} \times V_{\text{执行}}}{1 + \Gamma_{\text{执行}} \times D_{\text{执行}}} + \frac{E_{\text{结果}} \times V_{\text{结果}}}{1 + \Gamma_{\text{结果}} \times D_{\text{结果}}}$$

执行效用                      结果效用

冯廷勇 & 张碧滢, 2023, 心理科学进展

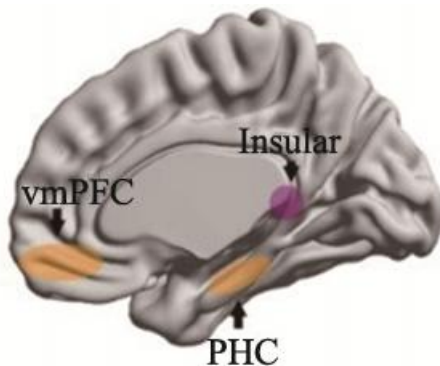
## Assessment — Decision — Execution

*Zhang, Liu, & Feng, 2019, WIREs Cog Sci*



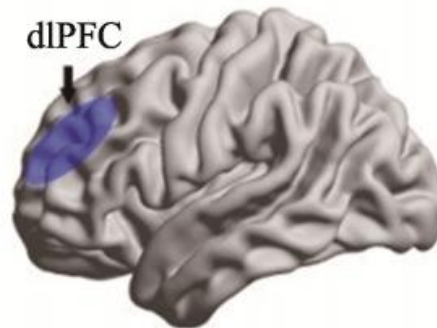
## Triple Neural Structure Network of Procrastination

episodic future thinking



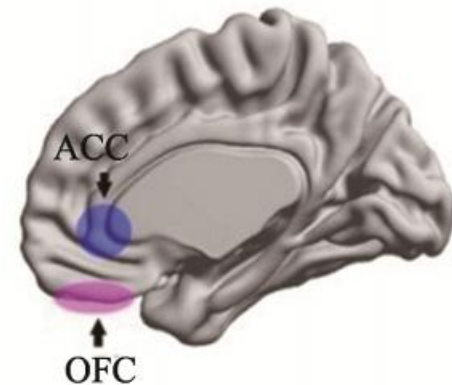
预期想象

self-control



自我控制

emotion regulation

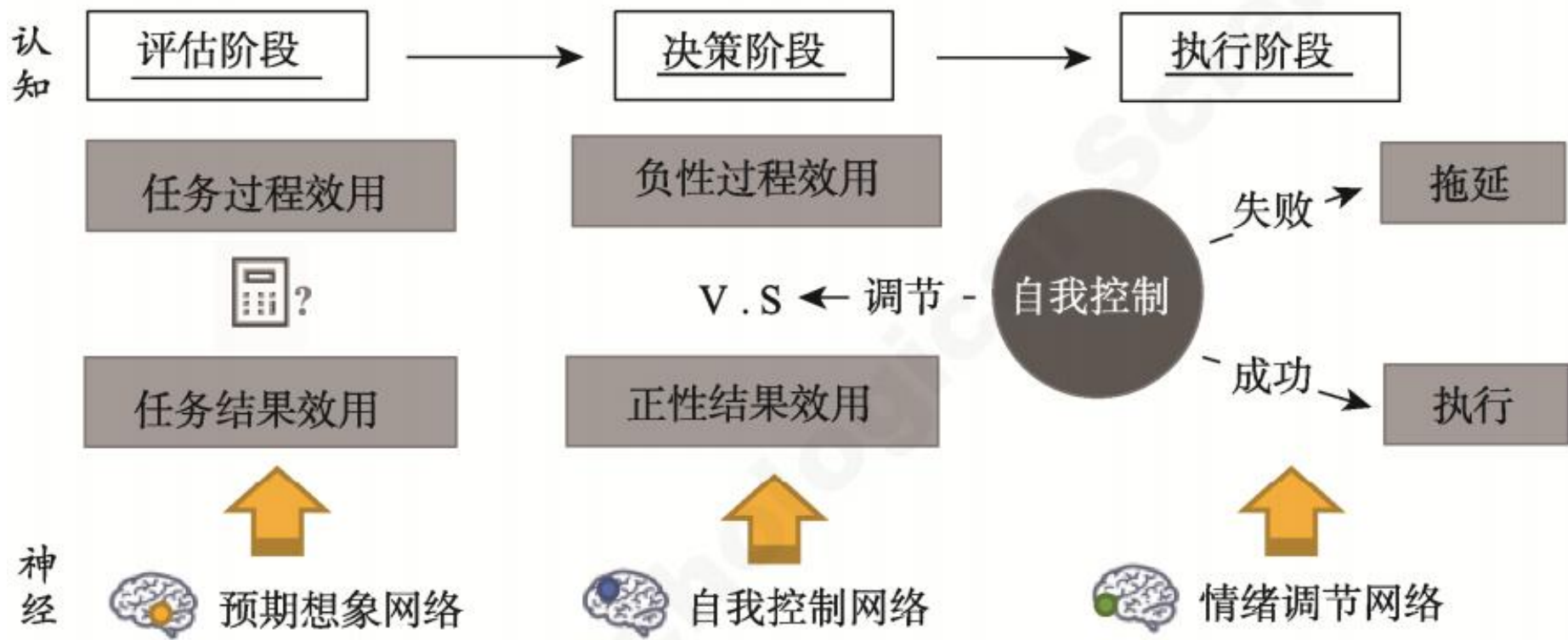


情绪调节

*Chen, et al., 2020, Cerebral Cortex*

冯廷勇 & 张碧滢, 2023, 心理科学进展

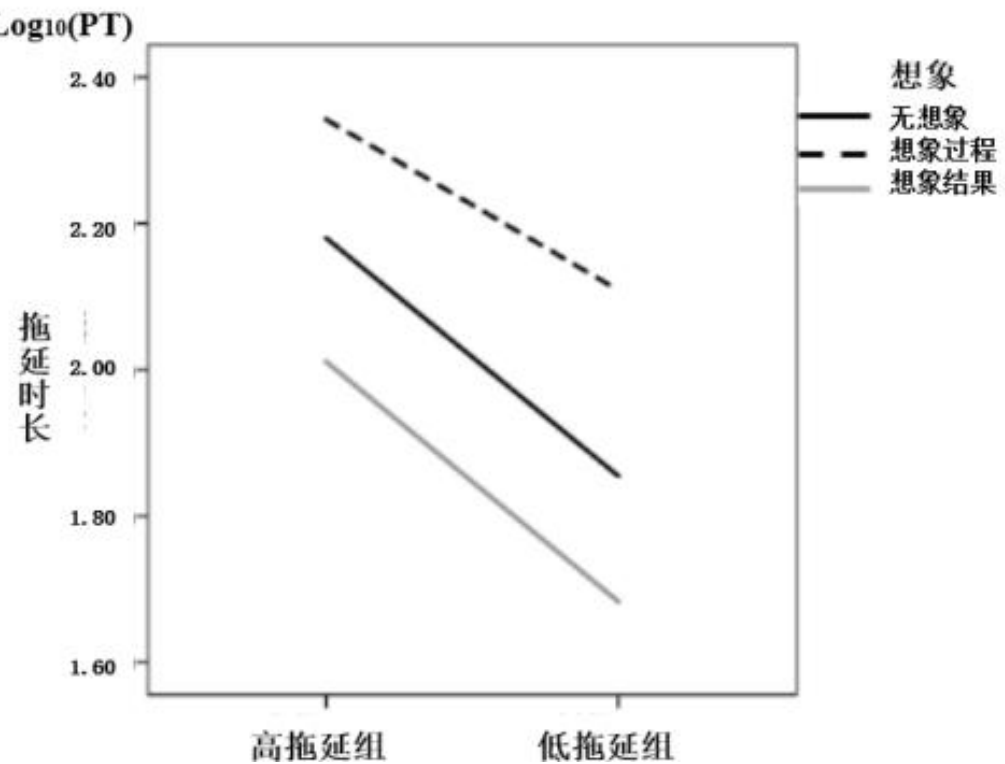
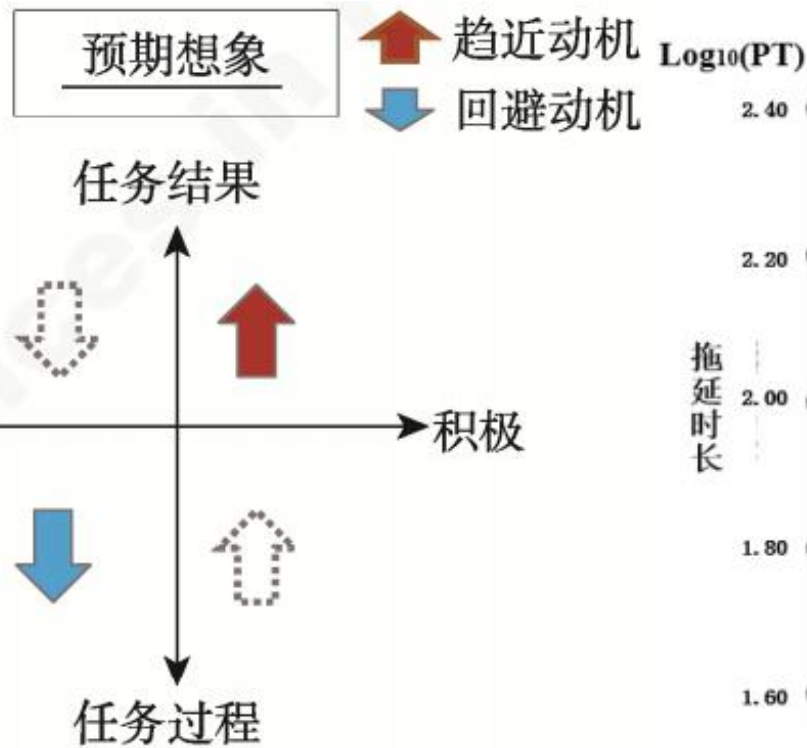
## Neuro-Cognitive Models of Procrastination



冯廷勇 & 张碧滢, 2023, 心理科学进展

# Intervention

## Intervention Based on Episodic Future Thinking



冯廷勇 & 张碧滢, 2023, 心理科学进展  
魏佳明, & 冯廷勇, 2019, 心理科学

# Intervention

## Intervention Based on Episodic Future Thinking

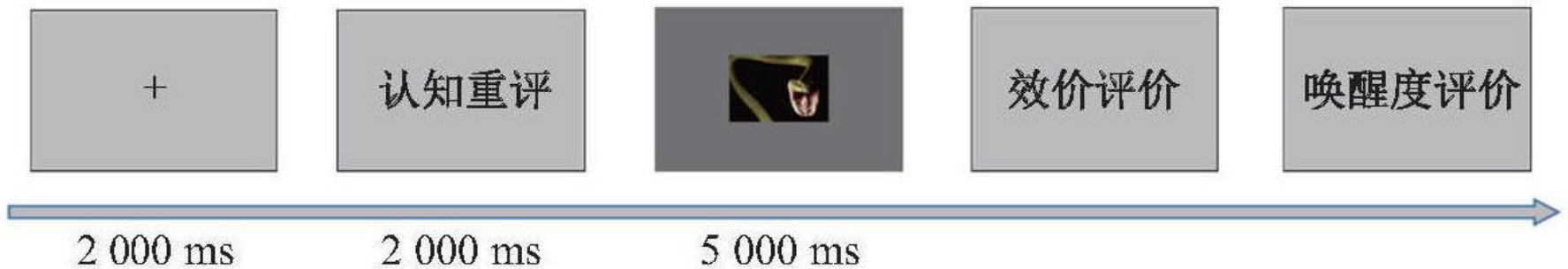
预期想象条件下



魏佳明, & 冯廷勇, 2019, 心理科学

# Intervention

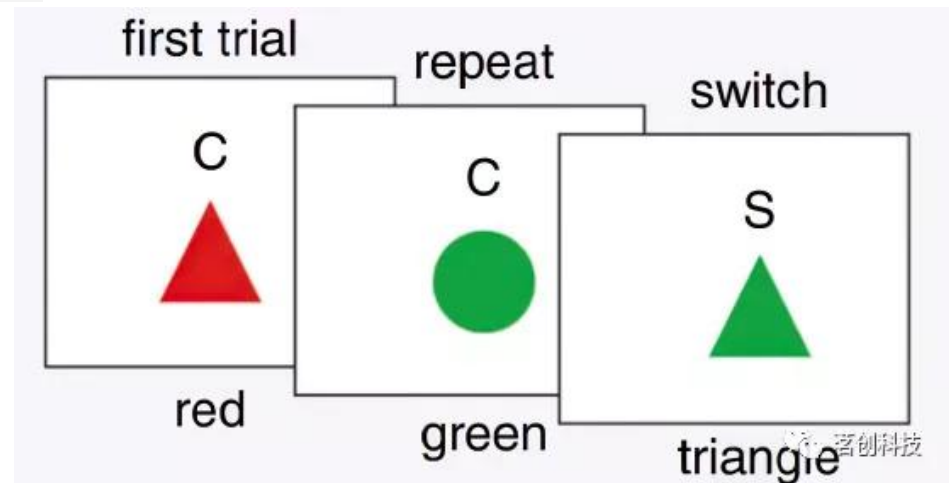
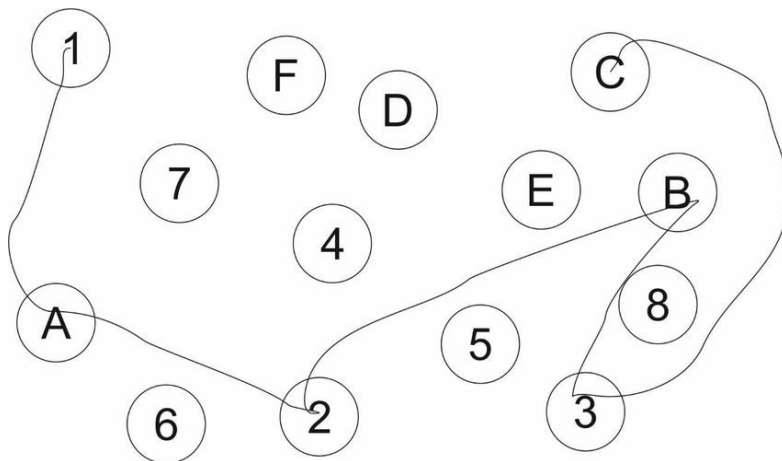
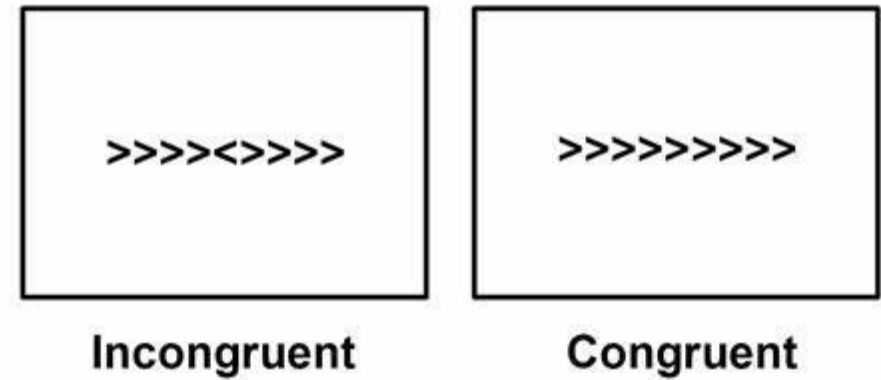
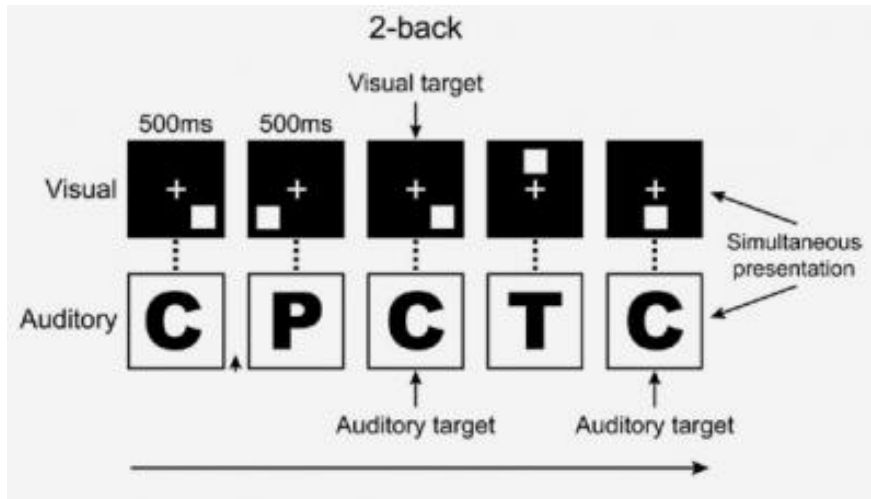
## Intervention Based on Emotion Regulation



Paradigm  Product



Measurement  $\longrightarrow$  Training



# Productization

Procedure



Product



**Focus  
Learn  
Get things done**

Cogmed is an evidence-based training program for improving attention

<https://www.cogmed.com/>



**PLAY  
ATTENTION**



# JavaScript、 Python

**Jpspsych (GUI)**

**Labjs (GUI)**

OpenSesame (GUI)

PsyToolkit(GUI)

Psychopy (GUI)

E-prime Go (GUI)

Inquisit (GUI)

**Gorilla,**

**脑岛,**

***PsyToolkit,***

***Cognition,***

***MindProbe,***

**Pavlovia,**

**Minds.testable,**

***OpenLab,***

Jatos (server resources (e.g., firebase, leancloud, NAT))

<https://github.com/ccc-lab/ccc-firebase>

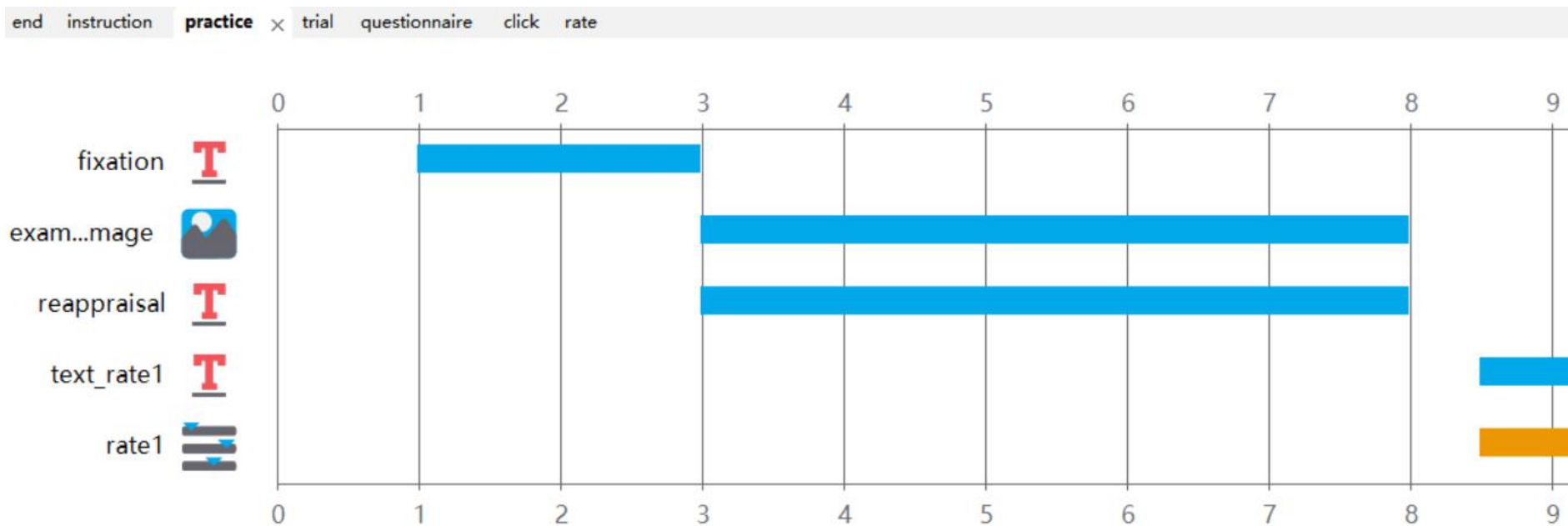
*COSN - OpenTutorials* / 荷兰心理统计联盟,  
覃恺洋, 230506

## CLI: Matlab PsychoToolBox (C++)

```
Currentpic=randi([1,picnum],1,1);
subinfo=['sub_', '_', SubNum{2}];
wptr=Screen('OpenWindow',0,255,[0 0 800 600]);
Screen('TextSize',wptr,30);
[ScreenXpixels,ScreenYpixels]=Screen('WindowSize',wptr);
for currentrun=1:repeat
    runlist=randperm(size(levels,1));
    for currenttrail=1:size(levels,1)
        DrawFormattedText(wptr,double(['?V?€???'',num2str(runlist(currenttrail))]),'center',ScreenYpixels*0.45);
        DrawFormattedText(wptr,double(['? ? ? ? ? ?',num2str(credits(runlist(currenttrail))),' ? ? ? ? ?']),'center',ScreenYpixels*0.65);
        Screen('flip',wptr);
        pause(4);
        PicStartTime=tic;
        while true
            if Currentpic>picnum
                Currentpic=Currentpic-picnum;
            end
            img=imread([picdir,num2str(Currentpic),'.jpg']);
            [H W c]=size(img);
            [KeyIsDown,Sec,KeyCode]=KbCheck;
            if KeyCode(Space)
                break;
            end
        end
    end
end
```

*open with VScode, from 张顺民, 冯廷勇*

## GUI: PsychoPy Builder



<https://psychopy.org/index.html>



脑岛 NAODAO

<https://www.naodao.com/>



<https://pavlovia.org/>

PsychoPy  
Local set up  
Experiment creation

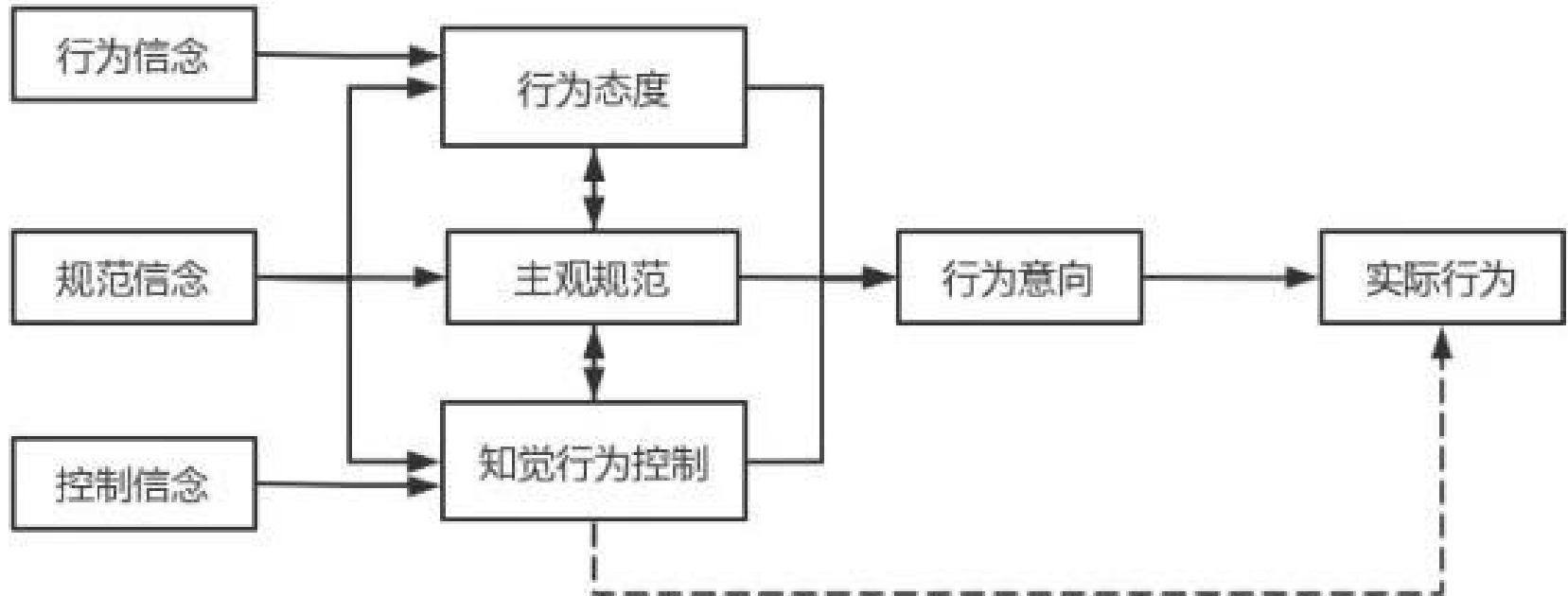


PsychoJS



陈国球，高晓雪，鄢忻媛，杜梦，臧寅垠，汪寅. (2023). 在线心理学何以本土化？基于历史、理念与综合性的分析. ChinaXiv. <http://dx.doi.org/10.12074/202206.00150V2>

## Theory of Planned Behavior, TPB



☆ How is individual behavior generated.

*Ajzen, 1991, Organ Behav & Human Deci Proce*

## Behavioral Intention

**I wanna do it.....**

☆ Meta-Analysis: The effect size of behavioral intention on actual behavior is moderate and slightly lower.

*Webb, & Sheeran, 2006, Psychological Bulletin*

☆ Most procrastinators have strong behavioral intentions.

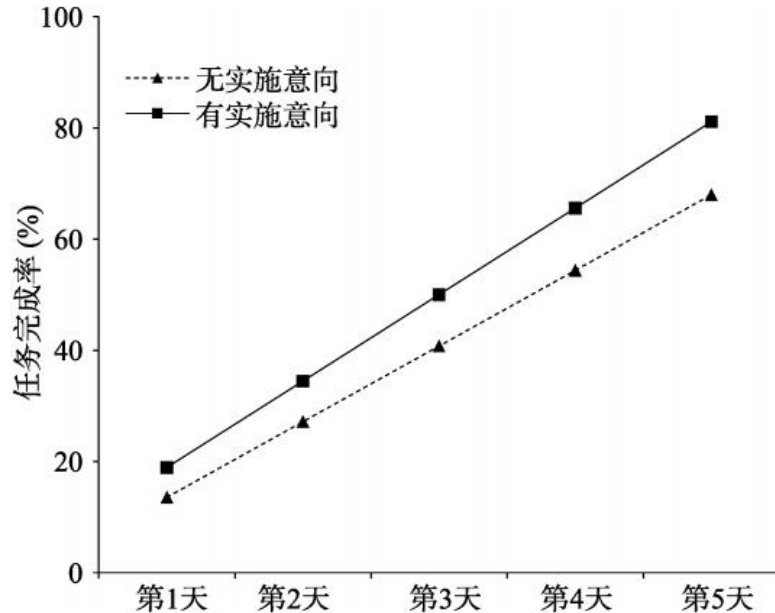
*Ariely, & Wertenbroch, 2002, Psy Sci*

☆ Not taking action at the right time and under the right conditions, or not persisting in the course of action.

*Gollwitzer, & Sheeran, 2006, Adv Exper Social Psy*



## Implementation Intention



**When sth. comes up,  
I'll do.....**

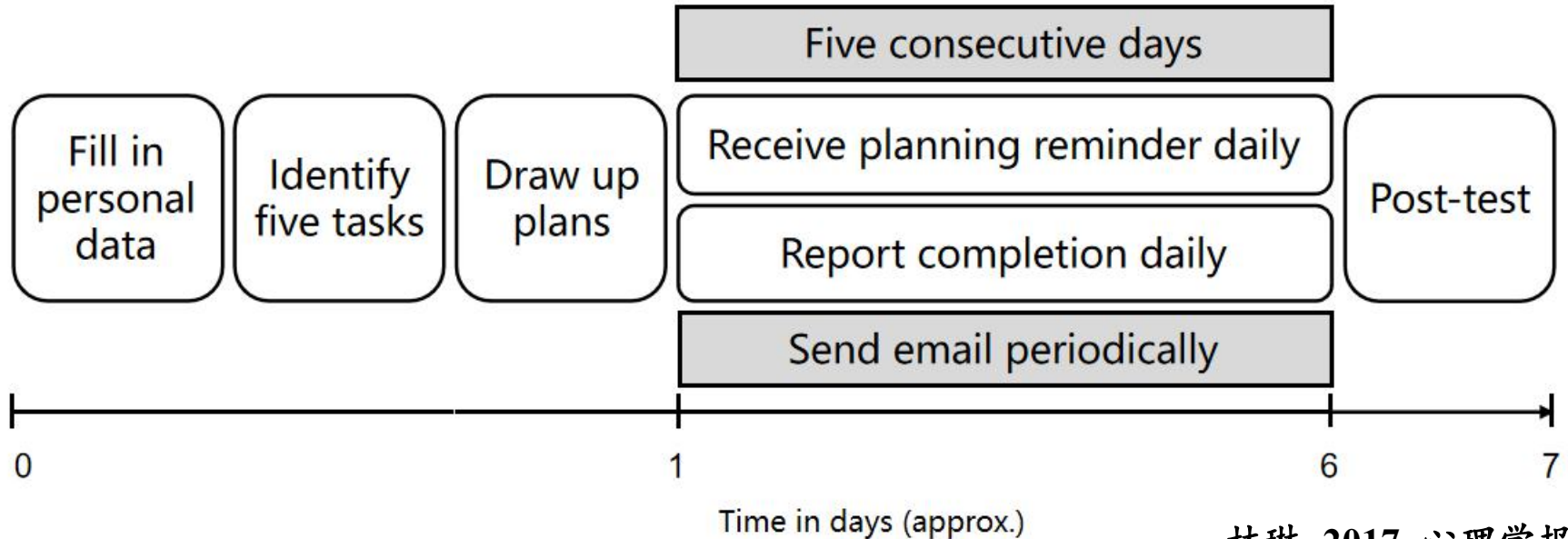
林琳, 2017, 心理学报

☆ Forming implementation intention is an effective means of self-control

*Gollwitzer, & Sheeran, 2006, Adv Exper Social Psy*

# Modification

## Modification Program Based on Implementation Intention



林琳, 2017, 心理学报

☆ Draw up plans: Estimated start time, completion time, time spent, completion method, likely difficulties encountered and solutions

☆ Reminder: 10:00 am, *"Please recall your specific plan and proceed with it, making adjustments as needed."*

# Modification

## Strategies for Self-Government

线索提示

社会支持

目标细化

Five consecutive days

Fill in  
personal  
data

Identify  
five tasks

Draw up  
plans

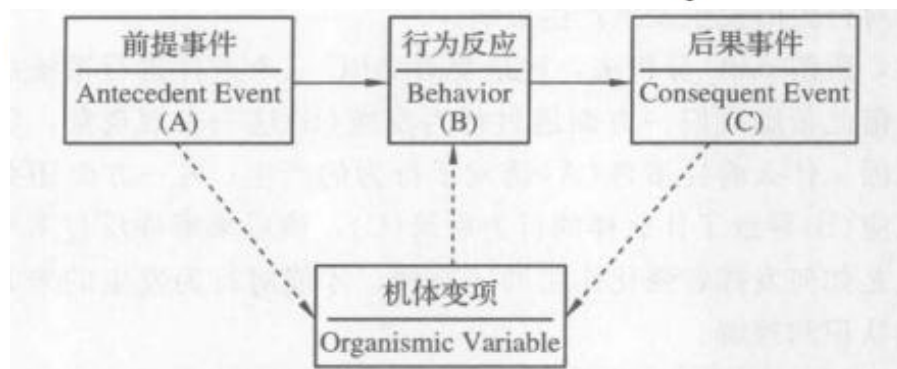
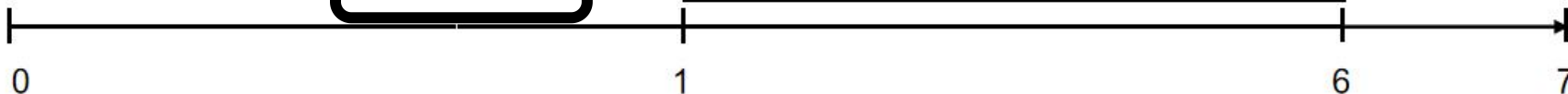
Receive planning reminder daily

Report completion daily

Post-test

行为契约

Send email periodically



<https://haox8023.jzfkwnet/col.jsp?id=104>



**Sheen Hao**

*Interested in Neuro-Psychology-Behavior-Computing*

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## 项目说明

本项目通过情绪调节策略——认知重评（积极重评）的训练，希望帮助训练者改善拖延的习惯，面对工作生活中的事件时，能够及时进行情绪调节，恢复状态。

关闭



<https://github.com/SheenHao8023>

**Xin Hao**  
SheenHao8023

Interested in psychology.

Edit profile

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Zhejiang Sci-Tech University  
Hangzhou, China  
19:59 (UTC +08:00)

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BehavModif Public

5 contributions in the last year

	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mon								
Wed								
Fri								

Learn how we count contributions

Contribution activity

May 2023

Created 1 commit in 1 repository  
SheenHao8023/BehavModif 1 commit

# Implication

**更多地欣赏自己**——曾经有什么写文章成功的经历？当时有怎样的感受？别人对我说了什么，做了什么？

**如果难以抵抗诱惑，就只关注下一步**——在不能开始写文章的时候这样想：假如我要开始写文章，（虽然并不想写），我会先做什么？我会先打开word。下一步呢？我会取个标题。很多时候，只要开始做，慢慢就能进入正轨。

*from 京师心理大学堂(BNU), 2023-05-06*

从最容易的小事开始，之后就会好很多

拖延如此难以克服的根本原因，就是当**每逃离一项任务、选择另一个可以带来愉悦的选项时**，拖延者都在被给予一个迅速的即时奖励；而每当获得这样的奖励，我们就有更大的可能再做。

*from 果壳(guokr), 2023-02-01*

# Thanks

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Cognition-Behavior Training Programme for Procrastination

Behavior Modification

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