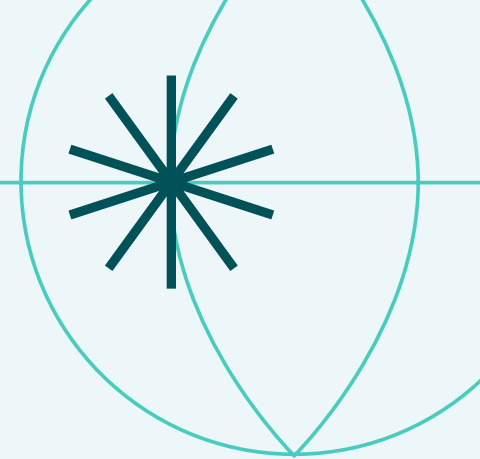




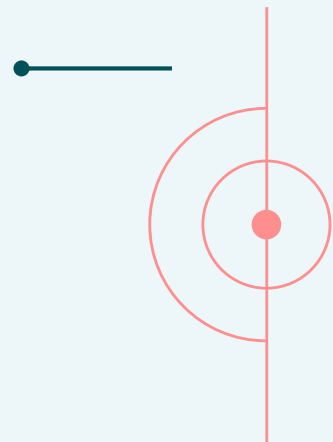
Psychological influences on problem-solving following lab-induced learned helplessness

Aqdas Khan, Dr. Scott T. Gaynor
Western Michigan University



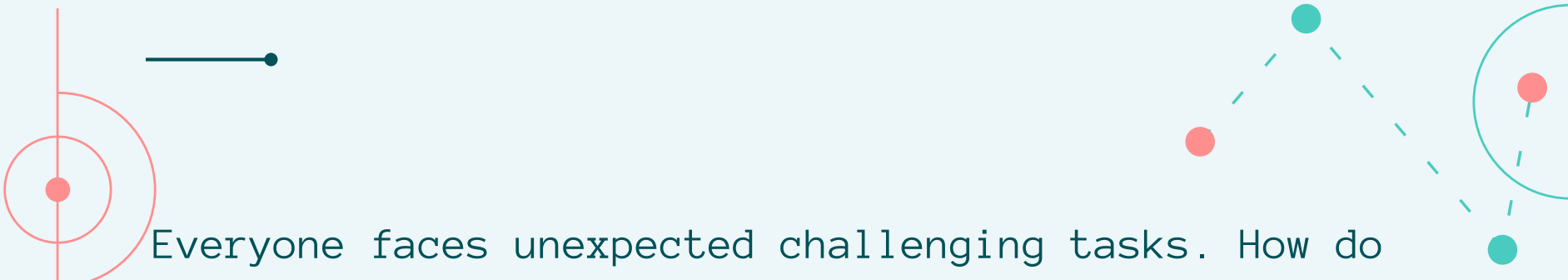


01



Introduction





Everyone faces unexpected challenging tasks. How do you react:

- Emotionally?
- Cognitively?
- Behaviorally?

What predicts these reactions?



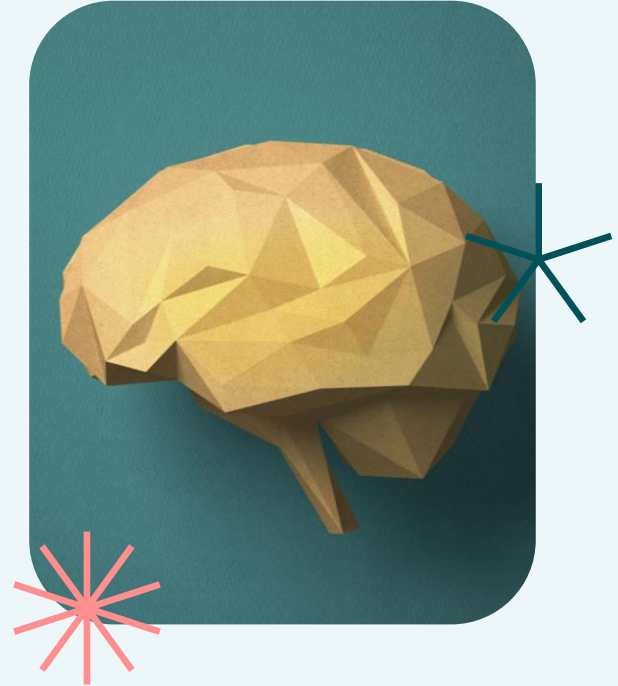


Possible Predictors

Grit- ability to persevere in the face of setbacks and resist discouragement (Duckworth et al., 2007)

Psychological flexibility- ability to remain open, aware, and engaged in values committed action in the face of negative emotions, thoughts, and memories (Hayes et al., 2006)

Need for cognition- tendency to enjoy thinking hard and engaging in effortful cognitive activities (Cacioppo & Petty, 1982)



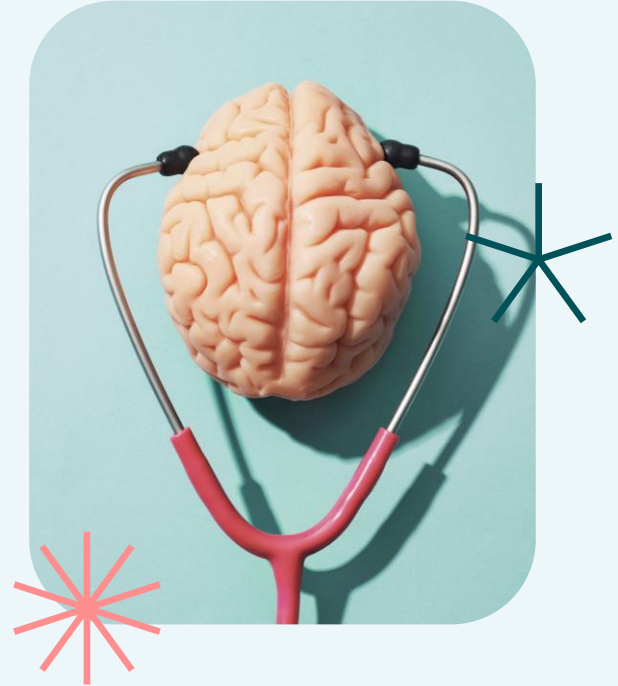


Possible Predictors (contd.)

Learned helplessness attributional style- tendency to conclude one is unable to solve problems one is facing (Quinless & Nelson, 1988)

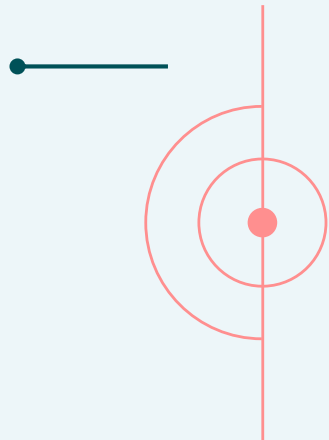
Cognitive fusion- tendency to get caught up in and struggle to let go of negative self-thoughts (Hayes et al., 2006)

The Big 5 personality traits- openness to experience, conscientiousness, extroversion, agreeableness, and emotional stability (Gillanders et al., 2014)





02



Methods

Used Testable: <https://tstbl.co/495-946>



Procedure

(within-subjects group design)



01

Informed Consent

02

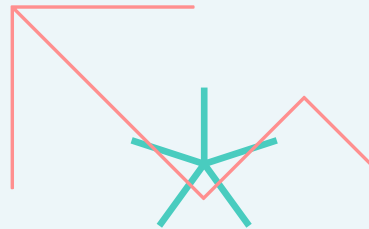
Demographic Questionnaires

03

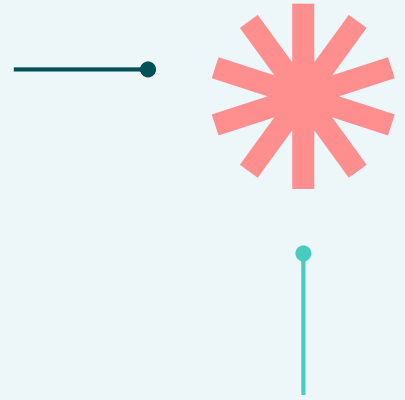
Psychological Surveys

04

Learned Helplessness Task



Procedure (contd.)



05

SCFQ and PANAS-10

06

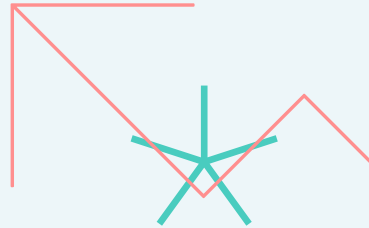
Compound Remote Associates Task

07

SCFQ and PANAS-10 (again!)

08

Funny Animal Video



Participants (N=20)

Statistics			
		Age	Cumulative GPA
N	Valid	20	19
	Missing	0	1
Mean		21.05	3.3858
Median		21.50	3.6000
Mode		22	3.60 ^a
Std. Deviation		2.282	.66637
Minimum		18	1.45
Maximum		26	4.00

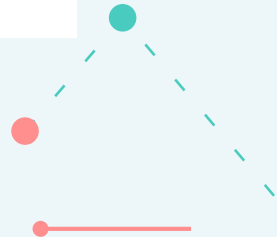
Gender	n
Cis-male	8
Cis-female	10
Non-binary/third gender	1
Other	1



Participants (contd.)

Ethnoracial and class standing distribution of the participants.

	n (N=20)	Percent
Race/Ethnicity		
White or Euro-American	12	60
Black or African American	1	5
Hispanic or Latinx, including Mexican American, Central American, and others	4	20
Asian or Asian-American, including Chinese, Japanese, and others	2	10
Other	1	5
Year in College		
Freshman	6	30
Sophomore	1	5
Junior	5	25
Senior	5	25
Super Senior	3	15





Psychological Surveys

Cognitive Fusion Questionnaire- measure of the difficulty letting go of negative thoughts (Gillanders et al., 2014).

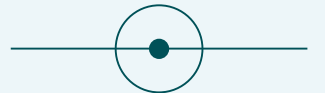
Need for Cognition Scale- measure of the tendency to enjoy thinking hard (Lins de Holanda Coelho et al., 2018).

Learned Helplessness Scale- measure of proneness to making learned helplessness attributions (Quinless & Nelson, 1988).

The Short Grit Scale- measure of tendency to persistence in face of challenges (Duckworth & Quinn, 2009).

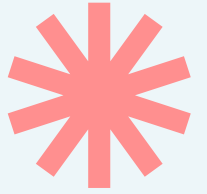
The Ten Item Personality Inventory- measure of the Big 5 personality characteristics: extroversion, agreeableness, conscientiousness, emotional stability, and openness (Gosling et al., 2003).

PSY-FLEX- measure of psychological flexibility (Gloster et al., 2021).

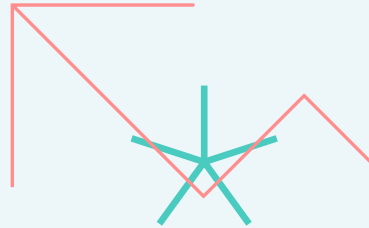




Learned Helplessness (LH) task



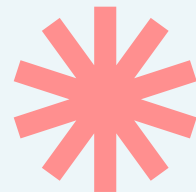
- Designed to make you fail
- Outcome not impacted by your response
- Inducing feelings of lack of control
- Makes you “give up”





Learned Helplessness (LH) task

(contd.)



Task Instructions:

In this experiment, you will be looking at a series of computer-presented images. Each image will involve two stimulus patterns on it. One to the left and another to the right. The stimulus patterns are composed of four different dimensions (shape, letter, size of letter, and color of letter), with two values associated with each dimension (square/circle, A/T, big/small, black/red). For each presentation, I have chosen one of the eight values as being correct. For each image, I want you to choose which side contains this value. To do this, you must click on one of the buttons presented underneath the image (left or right). If your choice is incorrect, the word "Incorrect" will appear on the screen. If your choice is correct, the word "Correct" will appear on the screen. Your task is to learn the predetermined value by your response, according to whether or not you chose the correct or incorrect response. The current experiment is adapted from a standard intelligence test. Most people learn to respond appropriately to the task with relative ease. Click "Next" to continue.

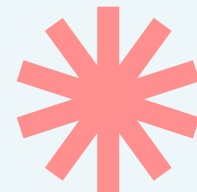
(Hooper & McHugh, 2013)



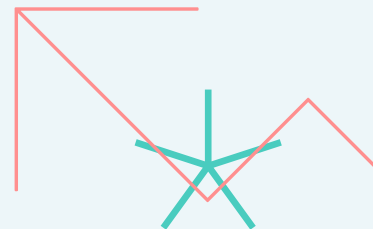
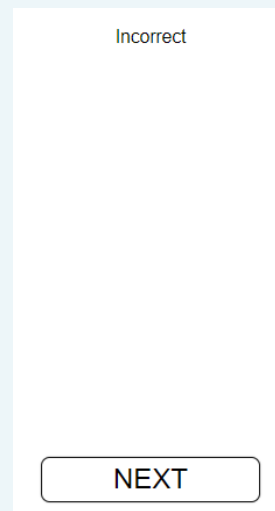
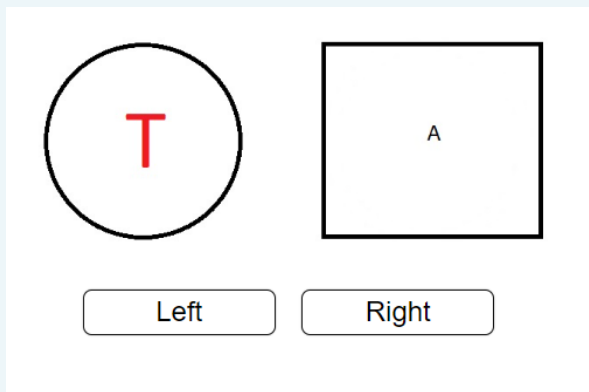


Learned Helplessness (LH) task

(contd.)



- 40 trials
- Predetermined response-independent feedback
- 60% "Incorrect"

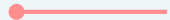




SCFQ and PANAS-10

State Cognitive Fusion Questionnaire- same as the original CFQ reworded to capture respondents' present moment experience rather than general tendencies toward cognitive fusion (Bolderston et al., 2019).

Positive Affect Negative Affect Scale-10- a list of 10 words that describe different feelings and participants indicate to what extent they feel that way at the moment (Watson et al., 1988).





SCFQ

Below you will find a list of statements. Please rate how true each statement is for you *at this moment*, by circling a number next to it. Use the scale below to make your choice.

1	2	3	4	5	6	7	
Completely untrue	Very untrue	Somewhat untrue	Neither true nor untrue	Somewhat true	Very true	Completely true	
1. My thoughts are causing me distress or emotional pain	1	2	3	4	5	6	7
2. I am so caught up in my thoughts that I don't know what to do	1	2	3	4	5	6	7
3. I am over-analysing the situation to the point where it's unhelpful to me	1	2	3	4	5	6	7
4. I am struggling with my thoughts	1	2	3	4	5	6	7
5. I am upset with myself for having certain thoughts	1	2	3	4	5	6	7
6. I am very entangled in my thoughts	1	2	3	4	5	6	7
7. It's such a struggle to let go of upsetting thoughts even though I know that letting go would be helpful	1	2	3	4	5	6	7



PANAS-10

Indicate the extent you feel this way RIGHT NOW	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
Interested	1	2	3	4	5
Distressed	1	2	3	4	5
Excited	1	2	3	4	5
Upset	1	2	3	4	5
Strong	1	2	3	4	5
Guilty	1	2	3	4	5
Scared	1	2	3	4	5
Hostile	1	2	3	4	5
Enthusiastic	1	2	3	4	5
Proud	1	2	3	4	5
Irritable	1	2	3	4	5
Alert	1	2	3	4	5
Ashamed	1	2	3	4	5
Inspired	1	2	3	4	5
Nervous	1	2	3	4	5
Determined	1	2	3	4	5
Attentive	1	2	3	4	5
Jittery	1	2	3	4	5
Active	1	2	3	4	5
Afraid	1	2	3	4	5



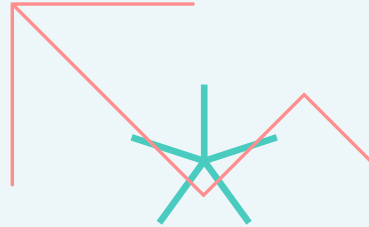
Compound Remote Associates Task (CRAT)



Task Instructions

On the screen, you will see a list of three words. Your task is to identify a solution word that will link all the others together. For example, if the three words on the screen were dew/comb/bee the solution word would be "honey" and you would type "honey" into the open space below the three words and then press the "Enter" key. Make sure your answer is typed in all lowercase. If you are unable to identify a solution word, you can type "DK" for Don't Know into the space and then press the "Enter" key.

(Bowden & Jung-Beeman, 2003)





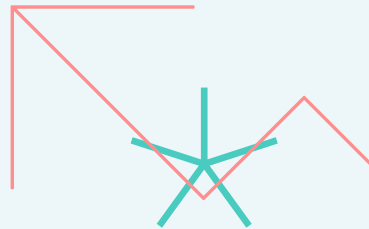
Compound Remote Associates Task (CRAT) (contd.)



- 20 trials
- Seem solvable, but solution is elusive
- 5 blocks of 4 problems: greater than 60% of participants solved in 30 seconds, 41-60% solved in 30 seconds, 21-40% solved, 0-20% solved in 30 seconds.

Example:
over/horse/plant

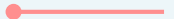
Can you guess?





SCFQ and PANAS-10

Administered again to measure negative self thoughts and mood.

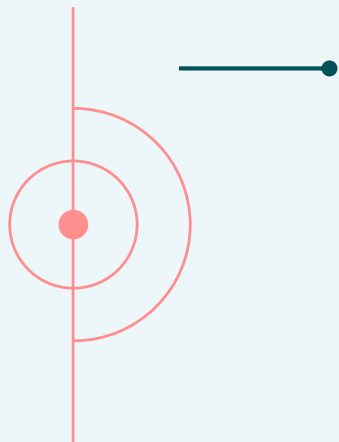




Funny Animal Video

Pairing evocative visual images with upbeat music- effective procedure for enhancing positive affect (Zhang et al., 2014)



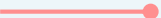


03



Results





Learned Helplessness Task





Behavioral



- Approx. 50% of each button press
- Lack of side preference->couldn't figure out solution
- Positive diff. in reaction times (Block 1-Block 4)
- Participants "gave up"

Preference formation and reaction times in LH task

	Left Button Selections (%)	Time Difference (Block 1 versus 4) (in ms)
N=20		
Mean	53.25	2078.9300
Median	51.25	1534.3500
Standard Deviation	8.16	1624.1358





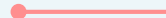
Behavioral (contd.)

- Reaction times used as measure of persistence.

Pearson's correlations between reaction times in LH task and psychological variables

	Total Time (in ms)	Time difference (Block 1 versus 4) (in ms)	
		Mean	Median
Trait Cognitive Fusion	-.080	-.226	-.272
Need for Cognition	.151	.231	.014
LH attributions	.289	.151	.210
Grit	.062	-.351	.018
Extroversion	-.331	-.253	.005
Agreeableness	-.386	-.579**	-.208
Conscientiousness	.122	-.222	.047
Emotional Stability	.087	.014	.057
Openness	-.509*	-.333	-.298
Psy Flex	.267	.615**	.590**

Note. LH= Learned Helplessness; Psy Flex= Psychological Flexibility; * significant at $p < 0.05$; ** significant at $p < 0.01$.





Behavioral (contd.)

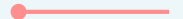
Significant correlations for lack in persistence:

Negative-

- ✓ Agreeableness
- ✓ Openness to experience

Positive-

- ✓ Psychological Flexibility



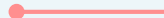


Cognitive and Emotional

Pearson's correlations between SCFQ and PANAS-10 scores following LH task and psychological variables

	SCFQ	Positive Affect (P)	Negative Affect (N)	Affect (P-N)
Trait Cognitive Fusion	.354	-.259	.497*	-.459*
Need for Cognition	-.209	.432	-.212	.469*
LH attributions	.734**	-.687**	.481*	-.815**
Grit	-.164	.309	-.297	.406
Extroversion	-.505*	.671**	-.089	.613**
Agreeableness	-.326	-.123	-.340	.059
Conscientiousness	-.284	.136	-.465*	.339
Emotional Stability	-.427	.308	-.591**	.545*
Openness	-.415	.473*	-.226	.511*
Psy Flex	.573**	-.550*	.196	-.562**

Note. SCFQ= State Cognitive Fusion Questionnaire; PANAS= Positive and Negative Affect Scale; LH= Learned Helplessness; Psy Flex= Psychological Flexibility; * significant at $p < 0.05$; ** significant at $p < 0.01$.





Cognitive and Emotional (contd.)

Significant correlations:

SCFQ-

- Increases with LH attribution and psy flex
- Decreases with extroversion

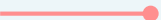
Positive Affect-

- Increases with extroversion and openness
- Decreases with LH attribution and psy flex

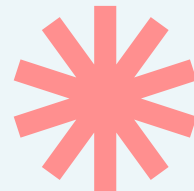
Negative Affect-

- Increases with trait cognitive fusion and LH attributions
- Decreases with conscientiousness and emotional stability





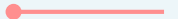
Compound Remote Associates Task





Behavioral

- Avg. number of correct responses= **2.65** (*Median*=2.00, *SD*=2.907)
- Total time spent on all sets answered incorrectly= **30.61s**
(*Median*=26.77s, *SD*=20.71)
- Was difficult to solve for the participants





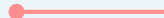
Behavioral (contd.)

- Reaction times on incorrect responses used as measure of persistence.

Pearson's correlations between reaction times in CRAT and psychological variables

	Total Time spent on incorrect responses (in ms)	
	Mean	Median
Trait Cognitive Fusion	.128	.142
Need for Cognition	-.026	-.054
LH attributions	-.311	-.292
Grit	-.291	-.272
Extroversion	-.089	-.086
Agreeableness	.289	.295
Conscientiousness	-.091	-.104
Emotional Stability	-.065	-.082
Openness	.380	.410
Psy Flex	-.108	-.118

Note. CRAT= Compound Remote Associates Task; LH= Learned Helplessness; Psy Flex= Psychological Flexibility; * significant at $p < 0.05$; ** significant at $p < 0.01$.

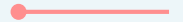




Behavioral (contd.)

Significant correlations for lack in persistence:

No significant correlations found (small sample size).



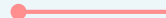


Cognitive and Emotional

Pearson's correlations between SCFQ and PANAS-10 scores following CRAT and psychological variables

	SCFQ	Positive Affect (P)	Negative Affect (N)	Affect (P-N)
Trait Cognitive Fusion	.215	-.147	.404	-.347
Need for Cognition	-.239	.544*	-.057	.453*
LH attributions	.562**	-.764**	.229	-.722**
Grit	-.055	.186	-.374	.359
Extroversion	-.385	.671**	-.138	.598**
Agreeableness	-.271	-.029	-.286	.143
Conscientiousness	-.365	.073	-.626**	.417
Emotional Stability	-.290	.320	-.359	.454*
Openness	-.252	.586**	.031	.436
Psy Flex	.500*	-.610**	.168	-.568**

Note. SCFQ= State Cognitive Fusion Questionnaire; PANAS= Positive and Negative Affect Scale; CRAT= Compound Remote Associates Task; LH= Learned Helplessness; Psy Flex= Psychological Flexibility; * significant at $p < 0.05$; ** significant at $p < 0.01$.





Cognitive and Emotional (contd.)

Significant correlations:

SCFQ-

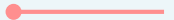
- Increases with LH attribution and psy flex

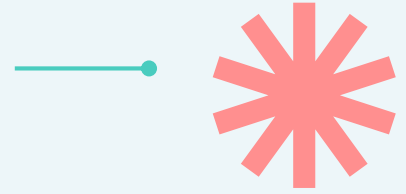
Positive Affect-

- Increases with extroversion, openness, and need for cognition
- Decreases with LH attribution and psy flex

Negative Affect-

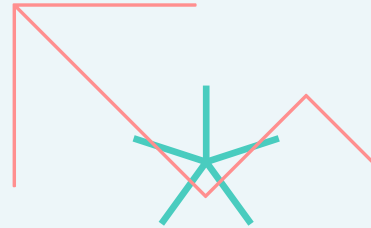
- Decreases with conscientiousness

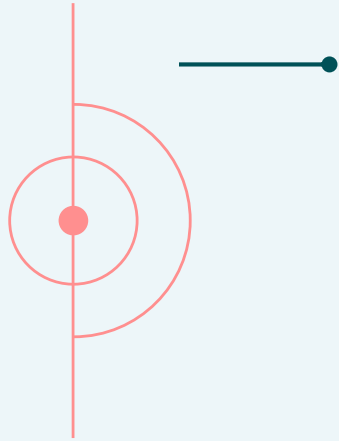




Analyses revealed...

- Psychological flexibility strongest predictor of lack in persistence
- LH attributional style strongest predictor of higher state cognitive fusion and negative affect
- Conscientiousness strong predictor of lower negative affect
- Extroversion best predictor for higher positive mood



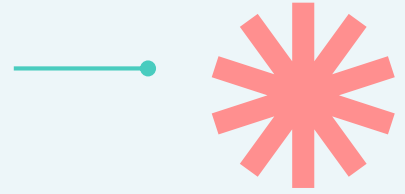


04

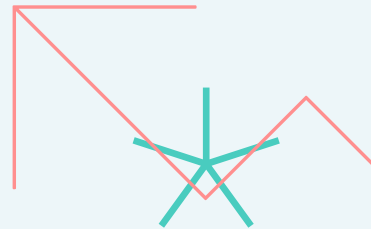


Conclusions and Implications





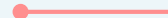
- More research
- New treatment guidelines (learned helplessness, negative moods, lack of persistence)
- Emphasis on training psychological traits (reduce drug use)
- For children (psychological traits highly trainable in them): **parenting, school guidelines, treatments**





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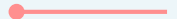
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Thanks!

Any questions?

