

"Why don't you just eat normally?" Why brains get so stuck in eating disorders

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Disclosure

- I have no real or potential conflicts of interest regarding the information in this presentation.
- I do not discuss off-label use of any medication.
- Each component of the story told here is based on real science. However, we have yet to prove definitively exactly how eating disorders work in the brain. This is my synthesis of a lot of science and practical experience; it's a way of thinking that has really helped me and my patients understand their experience.

“Why don’t you just eat normally?”

- **Spoiler alert!** It’s a bug in the brain’s code.
 - Tools that have allowed our ancestors to survive for the last 250 million years are malfunctioning in people with eating disorders.

Some important definitions

- THREAT
 - The brain's *perception* of possible danger.
- FEAR
 - A *feeling* of urgency to do something to protect yourself.
- RELIEF
 - The decrease in FEAR that happens when THREAT is perceived to go away.

Some more important definitions

- ESCAPE BEHAVIOR
 - Something you do in response to FEAR in order to get RELIEF.
- COMPULSION
 - The *feeling* of needing to do an ESCAPE BEHAVIOR you have learned to do in response to FEAR of a THREAT.
 - “If I don’t do this behavior, NOTHING WILL BE OK.”

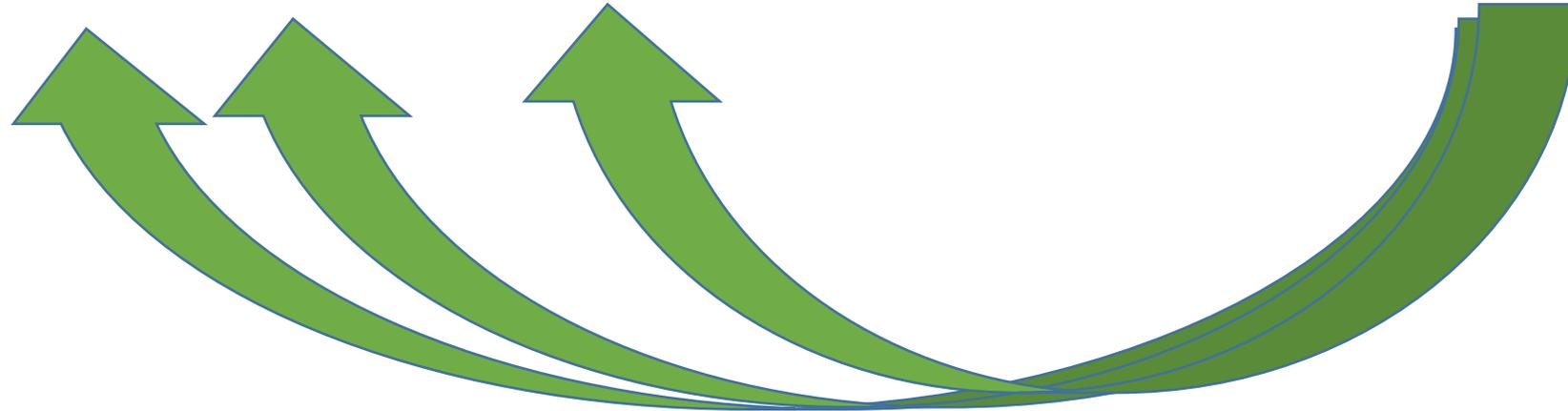
One more important definition

- **REINFORCEMENT LEARNING**

- Development of a brain pathway that gets stronger, shorter, and more automatic every time there is a positive outcome.
- Perception → behavior → good outcome
 - The perception was right
 - The behavior was right
 - Get more sensitive at perceiving and better at responding

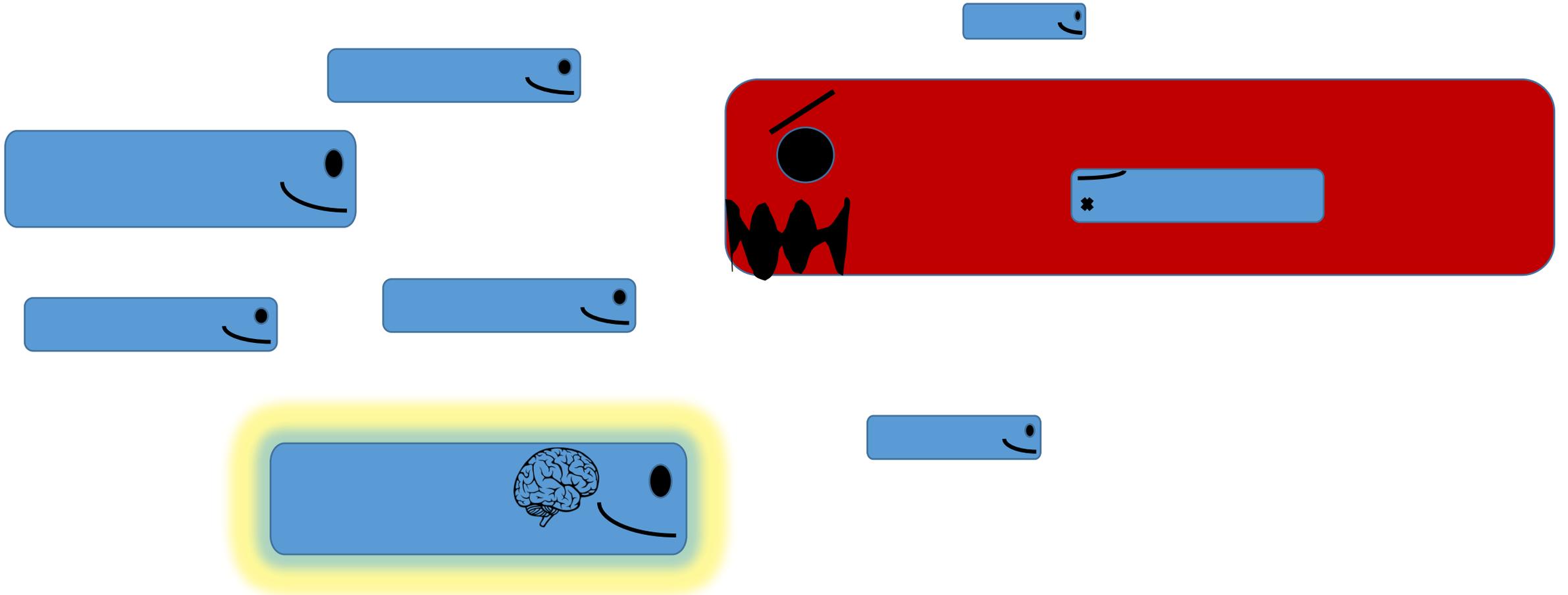
The fear-based reinforcement learning process

THREAT → FEAR → ESCAPE BEHAVIOR → THREAT → RELIEF

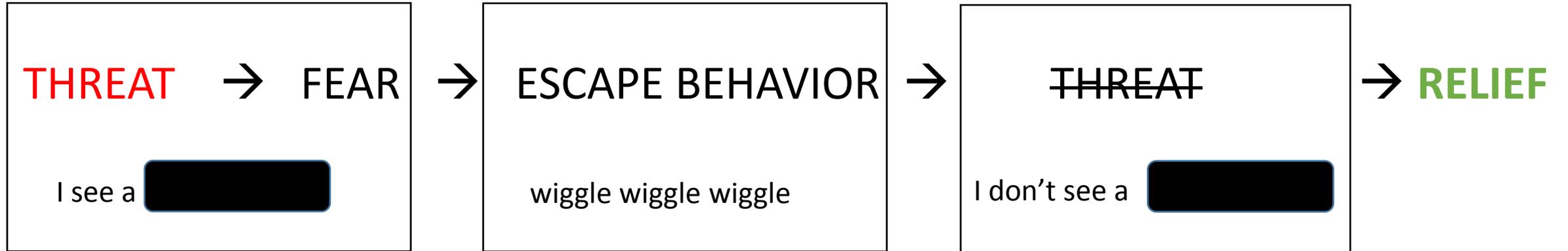


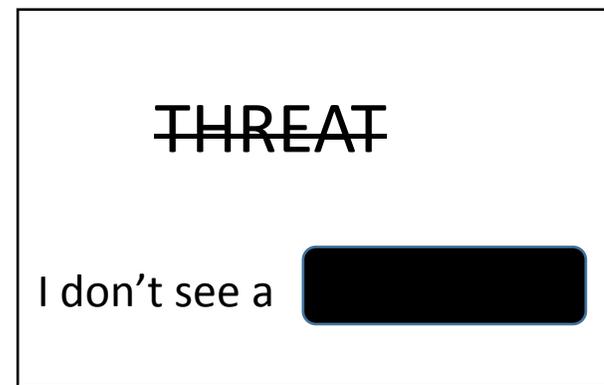
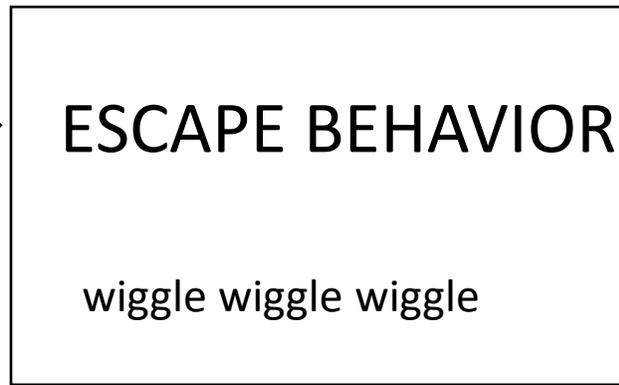
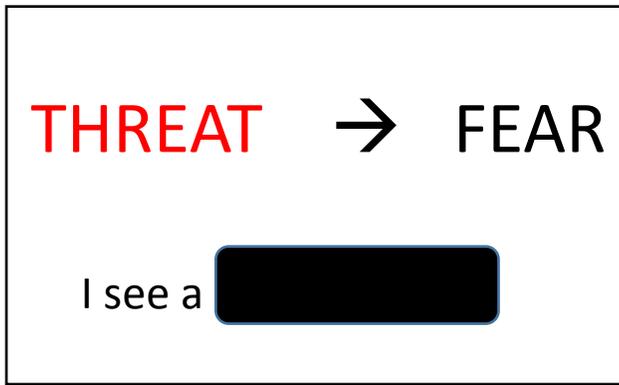
“The threat was real, I was right to be afraid, and that behavior was something I should do again.”

250 million years ago

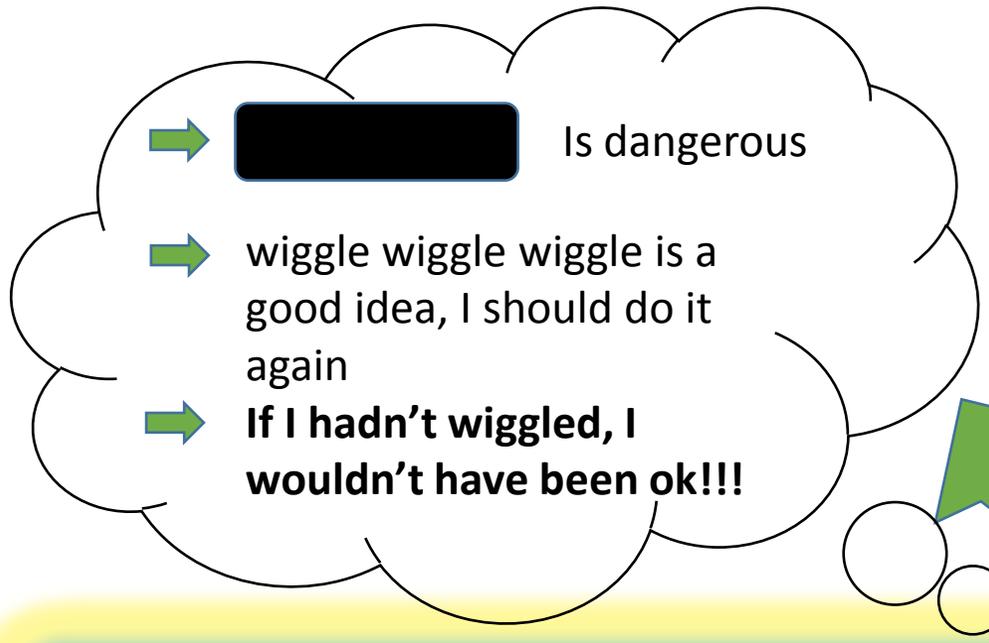


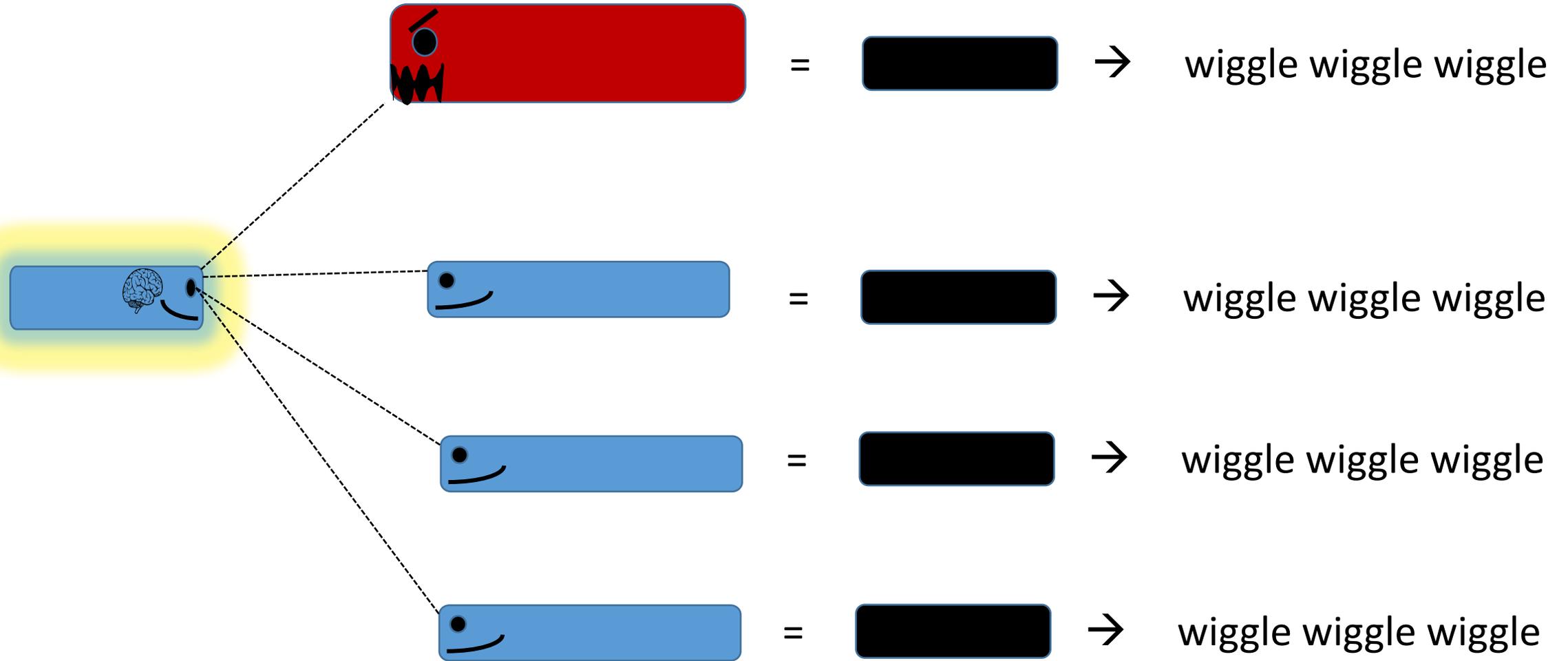
How Wormy's brain works





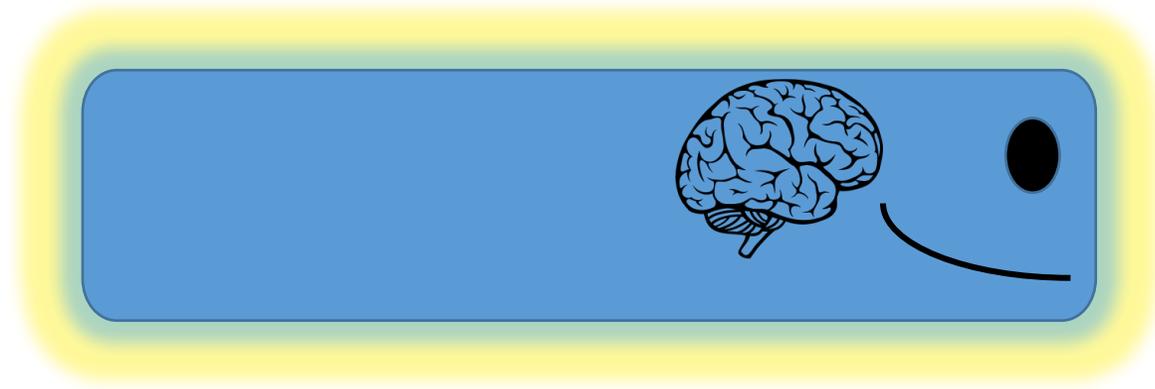
RELIEF





The fate of our little friend

- When Wormy encounters big red monster worm, he wiggles away.
What happens?
 - He survives!
- When Wormy encounters any of his wormy cousins, he wiggles away.
What happens?
 - He still survives!
- *Even if Wormy is wrong about being in danger 99.9% of the time, what happens?*
 - He survives!



“Hello, my name is Wormy, and I’m a compulsive wiggler.”

The flaw in our code

- Fear is based on *perception* of a threat, and relief is based on *perception* that the threat is gone.
- As long as we survive, we don't ever have to be right about our perception of the threat, or about our behavior having anything at all to do with
- Every time we go through the THREAT-FEAR-BEHAVIOR-RELIEF cycle:
 - Get MORE SENSITIVE to the threat
 - Get MORE AUTOMATIC in behavior
 - In other words, we become COMPULSIVE. We perceive a threat, and react to it automatically, without even really thinking about it. We just know it feels really, really important.

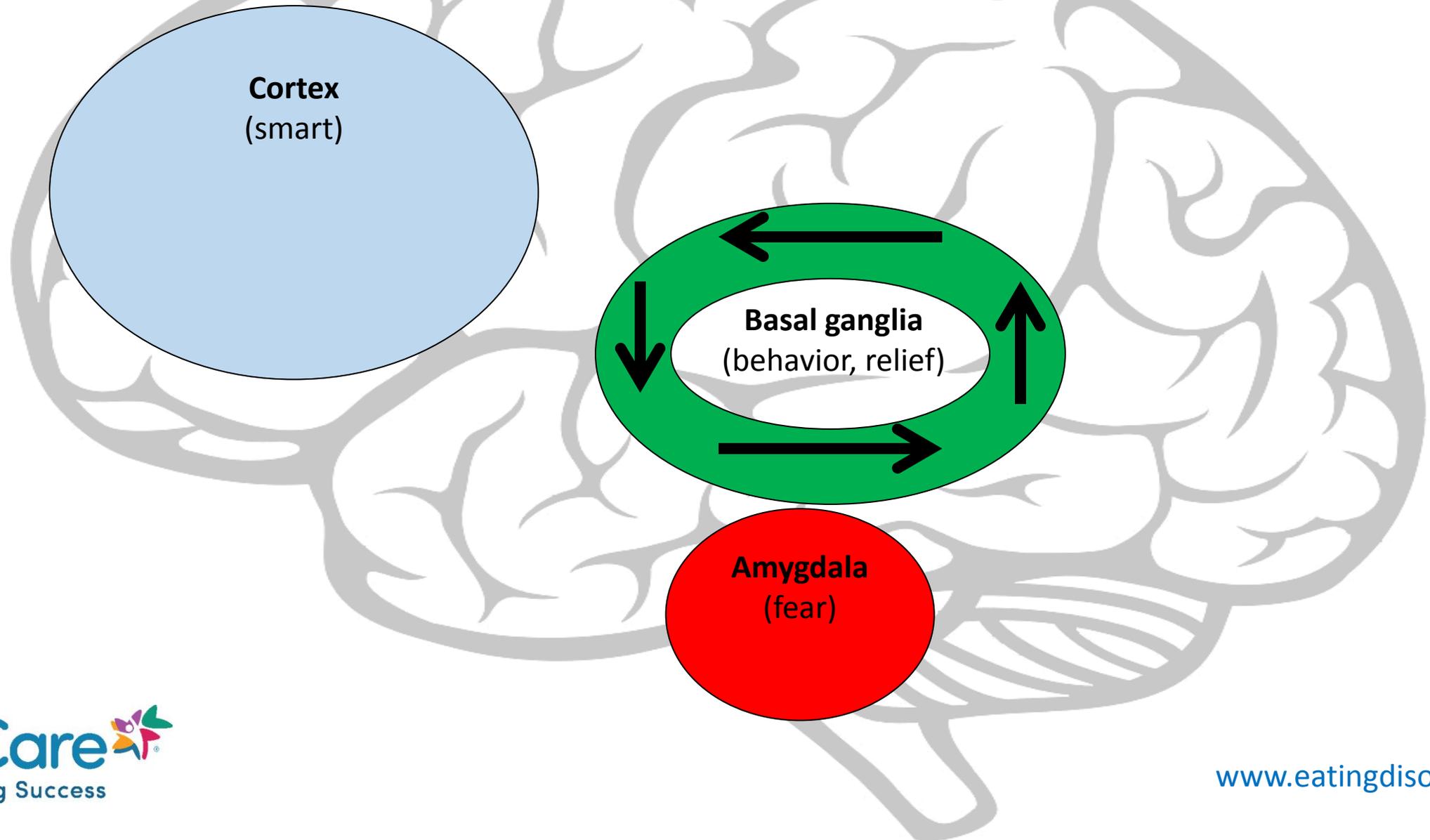
The flaw in our code

- Because we have this code built in to us in order to survive, by the time something becomes compulsive, it *FEELS LIKE A LIFE-OR-DEATH SITUATION!*
- It doesn't matter if we "know better," because the part of our brain that "knows better" is far away from the part that has learned how to "survive."

Eating disorder threats and escape behaviors

THREATS	FEAR	ESCAPE BEHAVIOR	THREAT	RELIEF
“gain weight”	[feeling]	Restrict	(belief about outcome of behavior)	Immediate, temporary
“be rejected”		Purge		
“be deprived”		Binge		
“be shamed”		Body check		
“get sick”		Exercise		
Etc.		Etc.		

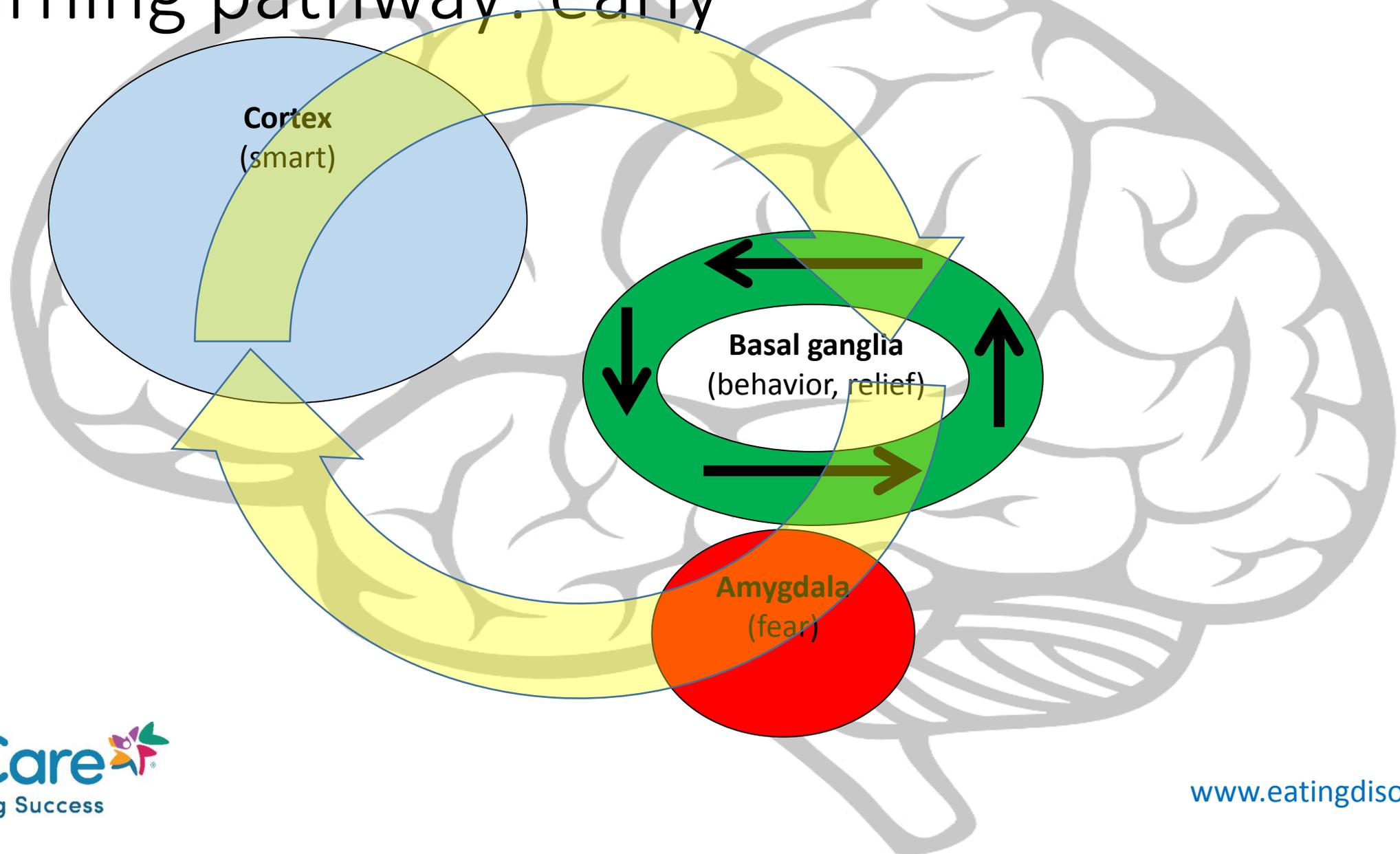
Brain structures



Learning pathway: early

- Use the “smart” part of our brain (cortex) to identify THREAT and come up with ESCAPE BEHAVIOR.
- Find out that it works through the usual learning pathway.
- Like learning to tie your shoes: at the beginning, it takes all your concentration, focus, intellect to do it.

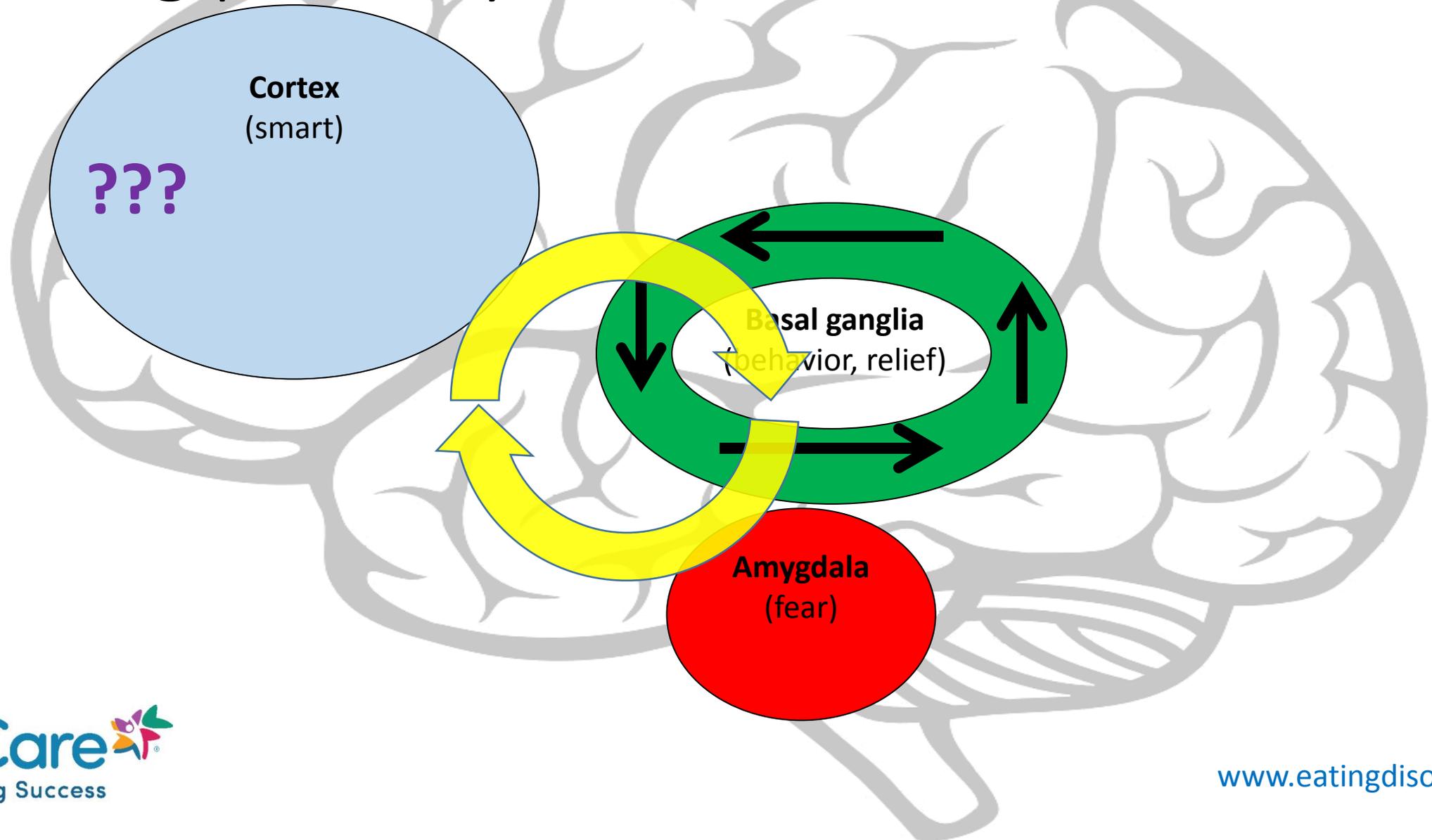
Learning pathway: early



Learning pathway: later

- Brain pathway has gotten short, automatic, and strong.
- Barely needs the cortex at all.
- Tying shoes: now you can do it over and over, automatically, without thinking about it at all.

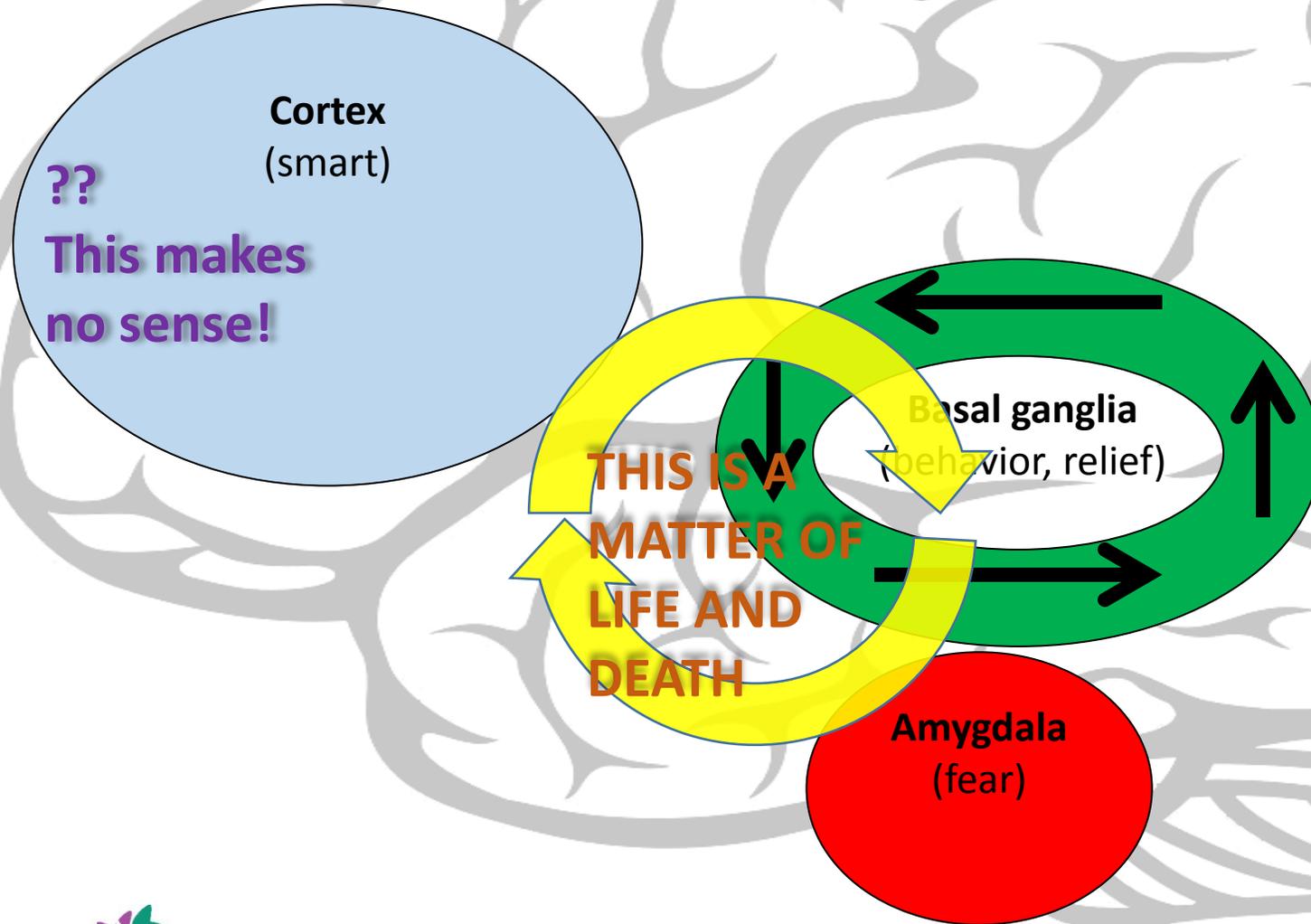
Learning pathway: later



Now you have an eating disorder

- Feel threat and fear all the time
- Engage in compulsive behavior over and over
- Relief is only temporary, takes more and more behavior to get the same relief
- If you try to stop the behavior, it feels like you are **RISKING LIFE AND DEATH**
- You know intellectually it doesn't make any sense, but that has **NO** bearing on the feeling

Your brain with an eating disorder

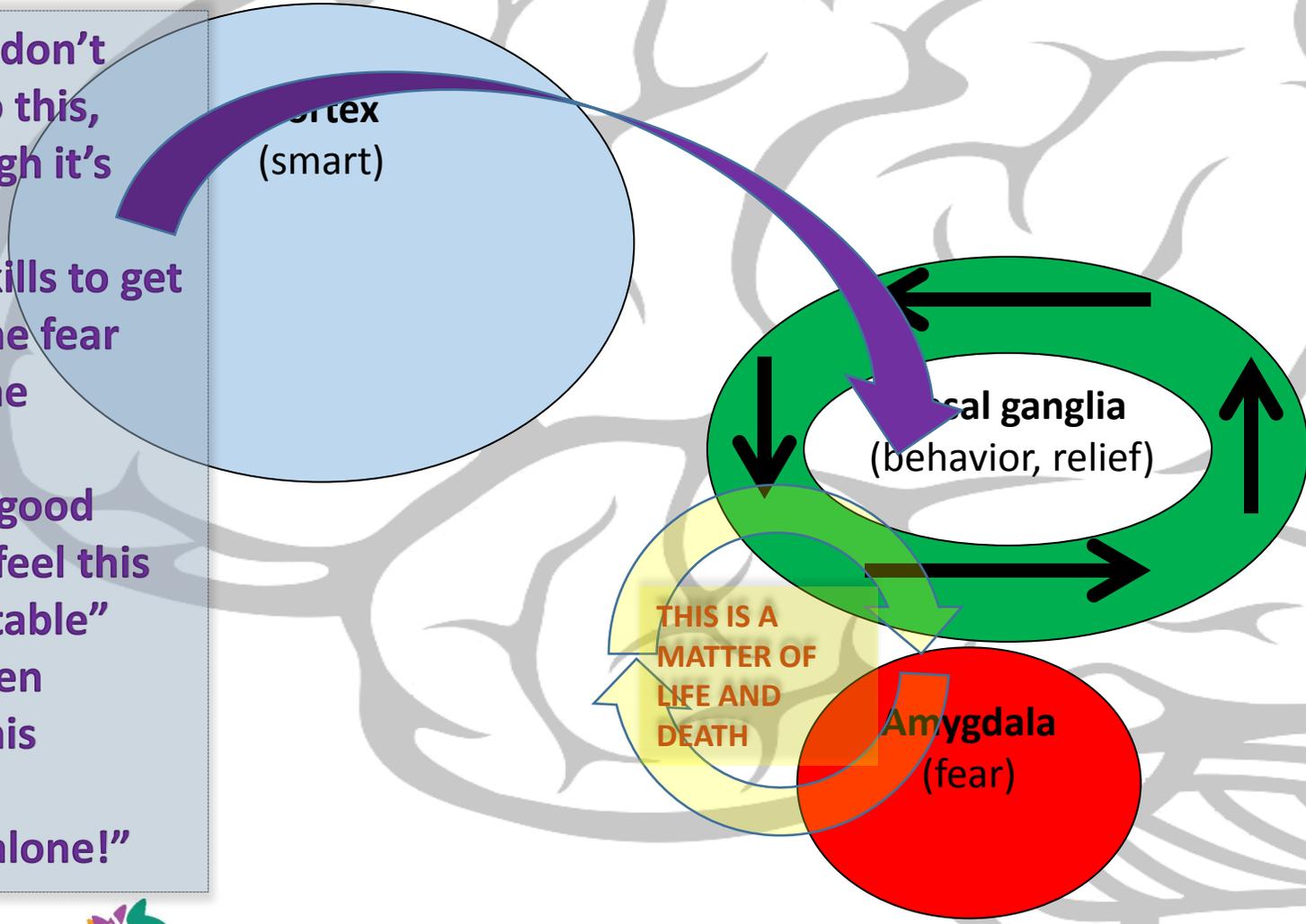


Is there hope? Better believe it!

- Treatment works to accomplish three things:
 - Interrupt the FEAR/ESCAPE/RELIEF cycle by imposing external structure.
 - Give a context in which it's safe to feel the overwhelming terror of NOT acting on the compulsions. Every time you feel the FEAR and DON'T perform an ESCAPE BEHAVIOR, it helps to build a NEW pathway!
 - Strengthen and organize the cortex through nutrition, medication, and psychotherapy, so that it can exert its influence on interrupting the cycle and supporting the new pathway.

Your brain recovering from an eating disorder

- “I know I don’t have to do this, even though it’s scary!”
- “I have skills to get through the fear without the behavior”
- “I have a good reason to feel this uncomfortable”
- “I’ve gotten through this before”
- “I’m not alone!”



We all want to help

Treatment centers around the country are all eager to help you or your loved one get through this scary and confusing process.

Anyone can feel free to contact me and/or any of the EDCare clinics (Denver, Colorado Springs, Kansas City) with any questions, whether you are interested in treatment, concerned about yourself or a loved one, or not even sure if any of this applies to you.

Thank you for your time!

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