Debugging Your Brain

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You are about to learn how to "debug your brain", making yourself happier and more effective. You'll end up with a systems-thinking way to view yourself, a mental model of your mind.

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I assign "homework" at the end of some sections – you'll learn the most if you actually do these. I have also collected my favorite resources around this topic in a published google doc.

Who's writing this? Hi, I'm Casey! I studied neurobiology at Yale University. I am a co-author on a few neurobiology papers.

Goals

Do you want to be a happier and more effective person? Of course you do!

The following "brain debugging" techniques will help you choose the best response in a given situation, to get the most effective outcome. One of the worst (least adaptive) outcomes is ending up in a "downward spiral". The following techniques are especially important in high-stakes or emotional situations where you might a "downward spiral".

These will help you understand yourself better, they will help you communicate your mental state more clearly, and they will help you understand other people better as well. It can even help you understand other people's perspectives more readily and quickly.

When you are on autopilot in a stressful situation, you may end up with an undesirable outcome. You might not convey your ideas clearly, and you might damage your relationship with the people involved.

When can you apply these techniques? Either in the moment it's happening, if you catch yourself, or after the fact when you can reflect back on the situation. You might be able to change the outcome of the current situation, or you might at least set yourself up to have a more desirable outcome if a similar situation arises in the future.

Opportunities

Here are three examples of situations where "brain debugging" may help. Each of these bad situations might end up with a desirable or undesirable outcome. Later we'll get into what you might do to make yourself more effective in each of these, getting a more desirable outcome.

Work Disagreement

Let's say you're at work and you have an idea, and your coworker has a different idea. You don't agree. You're having an argument, and it gets heated. You both believe very strongly that your idea is the best one for the situation. Hopefully your team will end up making the choice that's best for the situation. This topic will likely come up again – what can you do better next time?

Leaving The Door Open

Imagine you're a parent, and your kids forgot to shut the front door – again! You snap at them. You later feel guilty for snapping. It wasn't the most effective way to change their behavior in the future, and they got upset right back at you. You know you

could have done something differently, but it was hard to in the moment.

Hangry Meetup

Once I (Casey) was headed to a meet-up. I hadn't eaten dinner yet and I found out there was going to be NO PIZZA at that meet-up. It was raining. I stepped in a puddle. I thought to myself "everything is the worst". All of a sudden I couldn't imagine going to the Meetup anymore – and that would have been a shame, because I was really looking forward to it. I managed to catch myself, and I corrected this in the moment. I told myself that my wet/hungry state could both easily be fixed, and I convinced myself to go. I'm glad I did!

Inner vs Outer Brain

Some believe that "left-brained" people are more inclined to be creative, and "right-brained" people are more inclined to be analytical. Analytical vs creative may be a useful dichotomy, but these traits don't seem to stem from the two hemispheres of the brain. The difference between these two halves of the brain is

often exaggerated. Here is one study that goes into this in some depth.

A much more useful dichotomy is the inner brain versus the outer brain. Let's illustrate the difference between these two halves.

inner vs outer brain

You can see the difference in the two paths by watching this cat gif:

cucumber cat
A cat by its cat-food bowl turns around, sees a cucumber on the ground, and then jumps in fear. The cat likely realizes it's just a cucumber moments later

This illustrates the "Dual Pathway Model of Fear" (LeDoux). I'm using fear here as a vivid example, but the core idea applies to non-fear emotions as well.

The "low road" path is much faster than the "high road" one. The low road processes emotions very quickly, on the scale of milliseconds. It only has to go through the "inner brain" (Limbic System), which is a much shorter path. Humans and animals both have this part of the brain. It is older than the "outer brain" in evolutionary terms. The inner brain is where fear is experienced.

inner brain – emotion path
The "inner brain" or "low road" pathway is shorter and faster.

The "high road" is much slower. Thoughts are processed more slowly, on the scale of seconds. It has to go all the way through the "outer brain" (cortex), which is a much longer path. The cortex is the part of the brain humans actually think in – your conscious mind. Humans have the largest cortex relative to brain size – much larger than animals. Some people like to oversimplify and claim that animals can't "think" – that they don't use their cortex in the same way humans do.

outer brain – thought path
The "outer brain" or "high road" pathway is longer and slower.

"low road"	"high road"
"inner brain"	"outer brain"
Limbic System	Cortex
faster (~ms)	slower (~s)
Feelings	Thoughts

To summarize, "inner brain" feelings are processed much more quickly than "outer brain" thoughts are. We tend to "feel first, think second."

Systems Thinking

IPO Model

Developers, engineers, and scientists are great systems thinkers. Whether or not you identify with any of these, you can be a systems thinker too! Let's break down one of the most common and simplest systems models, the "IPO" Model.

engineer system
The IPO Model

IPO stands for "Input, Process, Output". The IPO Model has input, output, process in the middle, and sometimes it includes a feedback loop.

A textbook example of the IPO Model is the thermostat in your home. The thermostat measures the temperature of the room (input). It then compares that temperature to the set temperature, determining if it's above or below the temperature you set (process). It then toggles the heater on or off accordingly (output). The temperature of the room changes, and eventually the cycle repeats (feedback loop).

I learned about this model in a middle school "engineering" class, and it was my first exposure to systems thinking. I nicknamed

this simple model "The Engineer's System Diagram" at the time, and only later learned to call it the IPO Model.

You can apply the IPO model to software development – it maps pretty cleanly to a function. A function accepts arguments (the input) and returns a return value (the output). Some code happens inside the body of the function (the process). Calling the function also affects other things in the software, which sometimes calls the function again (the feedback loop).

Systems Thinking & Conscious Thought

We can use the IPO model to model brains, too!

The simplest form of this diagram is just input and output. Imagine a simple model of an animal that says they don't really "think" – they just respond to their environment.

The classic "Pavlov's Dog" idea uses this model. The dog is trained to associate a bell being rung with being fed. After this conditioning, every time the bell rings, the dog salivates – even if there is no food around. The dog doesn't have to decide whether to salivate. Salivation just an automatic reaction it has to external stimuli. This phenomenon can be referred to as "Pavlovian conditioning" or "classical conditioning".

In an oversimplification, we can imagine that there is no conscious "process" going on inside the animal. In contrast, we believe we humans always have conscious thought – we think thoughts and feel feelings in a conscious way.

animal vs human
Model of an animal: input leads to output. Model of a human: input leads to process leads to output.

But we humans aren't always so aware of what's going on inside our heads. When we're on autopilot, the "animal" model we just discussed (no process step) seems more appropriate. On the other hand, when we're more mindful that's when we're consciously aware of our thoughts and feelings. When mindful, we have more control/influence over the "process" part of this system.

autopilot vs mindful
Model of autopilot: input leads to output. Model of mindfulness: input leads to process leads to output.

Automatic vs Deliberate Thoughts and Feelings

You experience both "automatic thoughts" and "automatic feelings" – they both just happen "to" you. From the perspective of your consciousness, they're inputs that you can't control.

When you are being "mindful" you can then actively choose to have "deliberate thoughts" and influence your feelings. You can probably imagine how to have a "deliberate thought" – you just think it!

As for feelings, you can't will yourself to experience a specific feeling directly. You can, however influence your feelings based on the deliberate thoughts you think. This influenced-feeling is partially deliberate. This is partially within your influence, but not within your (direct) control.

	automatic	deliberate
thought	automatic thought	deliberate thought
feeling	automatic feeling	influenced feeling

Downward Spiral

Sometimes these automatic or deliberate thoughts and feelings can cause a troublesome feedback loop – a "downward spiral". A downward spiral is a feedback loop of negative thoughts, leading to negative feelings, leading to more negative thoughts, etc.

downward spiral 2

A downward spiral. Negative thoughts leading to negative feelings

leading back to more negative thoughts.

For example, that time when I stepped in a puddle on my way to a Meetup event. That made my already-bad mood even worse. I heard myself automatically think something like "I am stupid," and that kicked off a downward spiral for me.

A downward spiral like this is not usually so useful. It manages to both make you feel worse AND distract you from focusing on things that are important. We generally want to avoid downward spirals.

If you effectively influence your mind, you can often control whether you let this happen to yourself or not. You will become more effective, think more clearly, and choose a better response more often.

Homework

- Think about times you wish you had behaved differently. Look out for opportunities where "debugging" could help you end up with a better outcome.
- Draw out the "IPO Model" from memory.
- Try explaining "inner vs outer brain" to a friend or

coworker.

Read More

{% include debugging_your_brain_toc.md %}

Cognitive Behavioral Therapy

Introduction to CBT

Do you want to be a happier and more effective person? Let's try Cognitive Behavioral Therapy!

Cognitive Behavioral Therapy (CBT) is a specific and common form of "talk therapy". CBT is effective for depression, anxiety, general stress from work, and much more!

The core idea is that certain thought patterns contribute to emotional distress and behavioral issues. These "cognitive distortions" offer an inaccurate view of the world and/or yourself, and they can be changed and improved with practice and effort. The term "cognitive distortions" is usually used interchangeably with "maladaptive thought patterns" and "maladaptive cognitions".

The full list of mental problems CBT can help with is quite long - more than fifteen! Here's one source that lists a bunch of them: Hofmann, 2012. I'm not suggesting CBT is necessarily the best or only therapy for every single one of these mental problems. It is, however, one of the top most frequently used techniques, and it's often very effective.

You may be wondering "Do I need to have a mental illness for CBT to help me?" Nope! The use of the word "therapy" might lead you to believe that CBT only helps if you have a mental illness, but really it's useful for anybody.

Therapy? Training!

I think of CBT more like "brain training". To reduce its association with therapy, I like to replace the word "therapy" with the word "training". A lot of people I know like calling it "Cognitive Behavioral Training" because they find it more approachable. I'm glad the stigma around the word therapy seems to be reducing over time, but the stigma is certainly still around. Mental illness or not, it's definitely helpful to understand how to process your thoughts and feelings better.

If you are at all unsure whether you would benefit from ("need") actual therapy, I recommend you see someone to be screened.

Please don't treat this book as therapy — this is not a suitable replacement for the real thing.

More about CBT

This book applies "systems thinking" (like the IPO model) to Cognitive Behavioral Therapy. If you're interested in digging deeper into CBT after reading this book, I suggest the book "Feeling Good" by David Burns. In one study, "Feeling Good" was the most commonly prescribed reading assignment from therapists doing CBT with their patients. In another study, it was found to be as effective as actual therapy for some people.

Positive Outcomes

In my mind, there are two tangible positive outcomes from processing experiences: learning, and reducing involuntary and unwelcome thoughts ("intrusive thoughts").

If you can learn something from a situation, that might help you in a future similar situation. By "learn" I mean either something specific like "always make sure you have your keys when you leave the house", or something abstract like "try slowing down and be more careful".

Processing can also help reduce intrusive thoughts. Imagine a job interview. After the interview you're not sure how it went, and you think about it a lot. You play back what everyone said and did, thinking about what you could have done differently. This is probably some amount helpful, and some amount unhelpful. If these thoughts continue happening to you at inappropriate times, you might consider them "intrusive thoughts".

How can you put unwanted thoughts to rest? For a particular experience, try to find value in it by learning something. If you're not sure there's anything further you can learn from it, it may help to try accepting it Wells 2014. Finding value or finding acceptance can help reduce the frequency of the intrusive thoughts.

In software terms, intrusive thoughts are a bit like metrics and alerting. The subconscious mind sets up these alerts for itself. It decides that some experiences are important to process, and alerts you of those until they are fully processed. Addressing the root issue can often make it so the alert isn't fired off as often, or at all.

Hitting Your Debugger

When can you process an experience? It could be during, immediately after, hours after, weeks after, or even years after. How do we get into in introspective state to do this processing (debugging)? It depends on whether you're debugging during or after the stressful situation. Each is valuable in its own way.

During

If you're able to debug your brain during a stressful situation, you may be able to change the outcome of that situation. You may also be able to make this current experience a less stressful one.

Many people find it difficult to realize when it's a good opportunity to introspect in-moment. We'll go through a technique in the next section to help with noticing opportunities for introspection and getting you into that introspective mindset.

After

When you debug your brain after an experience, you may learn things that can help you in a similar situation in the future. This

post-processing can also help reduce how often you think of the situation, and how stressful it is to think about.

The Whoop Technique

A Ripe Situation

To start up your debugger in the moment, I recommend the "whoop" technique.

One day, my mother snapped at my younger brother for leaving the door open. Immediately after, she felt bad and apologized. She told us she really didn't know why she yelled about "such a small thing". After thinking about it for a bit, she realized that she hadn't eaten yet that day and was pretty hungry. That hunger affected both her mood and her response to my brother. After she ate some food, she felt much less irritable. I'm really proud of her going through this whole thought process — great job, mom!

Whoop!

This wasn't the first or last time this sort of thing would happen. My mom wanted to get better at this — better at noticing things like how her hunger, thoughts, and emotions can affect her mood. Once she got into that introspective state she could figure it out well enough, but she had trouble getting into that introspective state in the first place. In programming terms, she had trouble hitting a "debugger breakpoint".

My mom asked us to help her next time she got frustrated or upset like this. We brainstormed, and decided that next time we could loudly yell "WHOOP!". After the whoop, she might enter an introspective state (the "whoop state") and try processing the experience. Or, she could say "not now" and we would move on. She whoops herself, I whoop myself, my brother whoops himself. We all whoop!

Whoop

Hopefully this story makes the whoop technique memorable for you. Yelling whoop is both helpful and hilarious. A whoop surprises you out of your current mindset. If you were about to downward spiral, it halts that for a moment. It puts you into a different mental state where you can be ready to think about

what made you so frustrated in the first place. For my mom, it wasn't really what my brother was doing — she figured out it was more about her hunger. We'll cover more things that might affect your mood later in this chapter.

This technique is most useful for whooping yourself: either out loud, or quietly in your head. If you want to recruit friends or family to support you that's great, but definitely optional.

In programming terms, a "whoop" is like hitting the "debugger breakpoint" where you can take a moment to "inspect" what's going on. From here you can inspect local variables, global variables, the call stack, and even run some code that will affect the program even after you leave the breakpoint.

Whoop Practice

It takes a lot of practice to get good at noticing when introspection will help. Just being able to notice opportunities is a huge step forward. Whenever you get into this introspective state ("whoop state") I want you to congratulate yourself. You'll get better and better the more you do this. Be patient with yourself in the meantime.

When not to control your thoughts?

It does cost time and energy to introspect. If you don't have the time or energy to do it as much as you'd like, that's okay and normal. In fact, sometimes you may enter the "whoop" state briefly, decide it's not worth introspecting right now, and leave before processing things. If that feels right, that's totally okay.

You probably want to prevent most downward spirals. Any that are a waste of your time and energy, or if you think you'll regret your actions. But sometimes it might be worth it to let yourself get worked up – you might be driven to focus on something you wouldn't otherwise.

I got really upset once. I was eating in a food court, charging my phone, and a security officer rudely told me I couldn't use the power outlet. I felt myself getting worked up, I whooped internally, and I entered an introspective state. I considered — should I control my thoughts and feelings and prevent myself from being worked up? In this case, I decided to allow this to motivate me to act.

I was energized enough to talk to the manager later and make my thoughts known. I explained: it cost virtually nothing to the company (literally <$0.001 for a full phone charge). I wasn't

in the way of anything. I wasn't taking up needed space (the food court was empty). There was no sign up about this rule anywhere. And the person asking me to unplug was rude about it.

If you wouldn't have acted the same way as me, that's okay. I believe it was worth it communicating this to the manager, both for the situation and for myself. I felt better because the information (my frustration/rationale) made it to the right person who could potentially change things. I was ready to accept it if they chose not to act on this — but not sharing this information would have bothered me.

You can get very skilled at introspection and still allow yourself to get worked up sometimes. You don't need to always mechanically control your thoughts.

Let's imagine that you're now an expert at using the whoop technique to get into an introspective state. What's next?

Post-hoc Rationalization

When my brother didn't close the door, my mom stopped to introspect for a moment. If she hadn't, she might have might

have explained her behavior in an unsatisfying, inaccurate way called a "post-hoc rationalization". Some blatant examples: "he always does that!" (even if he hasn't done it much) or "he's going to let all the heat out!" (even if the heat wasn't on). Post-hoc rationalization can happen during stressful or non-stressful situations – anytime.

Post-hoc means "after the fact". We often experience a gut reaction first (inner brain), and then afterwards attempt to explain our thoughts and feelings quickly (outer brain). Often the quick attempt at explaining it is inaccurate or incomplete. This could cause internal conflict for yourself, or conflict with others.

When you find yourself experiencing this, consider taking a moment to introspect. Just because the explanation is inaccurate doesn't mean the gut reaction isn't based on something real. By spending time processing you may be able to come up with a fuller, more satisfying explanation for yourself and for others. Whoop!

Identifying Inputs

We'll go through our the Input-Process-Output (IPO) model of the brain in chunks. The first section will be about inputs

in general, the next section will go in-depth about processing feelings, and the final section will go in-depth about processing thoughts. Once you process everything, you'll be well-equipped to choose the most adaptive response.

Let's talk about the inputs to your system. I break this into four categories: automatic feelings, automatic thoughts, external stimuli, and your current bodily state.

IPO Inputs

Automatic Feelings

Any feelings you experience are a type of input. A feeling can be present whether you can accurately describe it in words or not. A feeling can sometimes come with automatic thoughts describing it, but sometimes it won't.

This might encompass a feeling you get in a particular moment like a moment of fear, or a low-level background feeling like being anxious for a day. The specific distinction between these two isn't super important — it's more important that you scan yourself for both kinds.

Automatic Thoughts

An automatic thought is one you don't actively choose to think. In your conscious mind you just "hear" yourself thinking them. My mom automatically thought the words "Oh Dalton, not again!!". This thought came to her around the same time as an "automatic feeling" of frustration. Both automatic feelings and automatic thoughts are inputs to the conscious part of your brain; these aren't directly under your control.

External Stimuli

External stimuli are anything that happens outside of your body or mind. Events that happen around you — like my younger brother not shutting the door. It could be some event from earlier in the day, like if you wake up late or miss a cup of coffee. It could be something someone said to you the day, month, or year before. These events happening to you are separate from any thoughts or feelings you have about these "stimuli".

Bodily State

A fourth type of input is your current bodily state. My favorite example is the word "hangry" — short for hungry-angry (a portmanteau!). If you're hangry, that means your state of hunger is leading you to experience anger, and you may respond to the situation with anger. When my mom realized she hadn't eaten, she apologized to my brother, moved on, and got some food.

I am so glad "hangry" has become such a common term. I would love to have an even richer vocabulary like this. I haven't come up with any mashup words that are quite as catchy as "hangry", but hyphenation helps me a lot. Instead of pushing for "tiredrated" I just use tired-frustrated instead. Any combination [bodily-state]-[emotional-state] is a possibility. For myself, I distinguish between many types of hungry (stomach-volume-hungry vs sugar-hungry vs thirsty-hungry and more). I distinguish between many types of tired (physically tired vs sleepy-tired vs socially drained vs focused-for-too-long drained).

Those are four types of input: automatic feelings, automatic thoughts, stimuli from the environment, and current bodily state. Now equipped with all this context, we're ready to start processing these emotions and thoughts.

Homework

- What are the four major types of inputs to your consciousness?
- Practice the "whoop" — whoop yourself 3 times today. While in this introspective state, notice your inputs. Identify inputs from each of the four major types of inputs.
- Explain CBT (at a high level) to a friend. Do a bit of independent research (googling!) if you want to be able to speak about it more accurately.
- Use the term "post-hoc rationalization" in a conversation this week.

Read More

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- Themes - About Processing
- Goals; Benefits
- Emotions as Inputs
- Processing Your Own Experiences
- Friend
- Rubber Duck

- Journal
- Meditation
- Learning from Others' Experiences
- Reading Fiction
- Emotional vocabulary
- Listening to Friends

writing > talking > thinking
matrix: self, other, imagined-other vs writing, talking, thinking

Experience Processing

In this section you will learn specific techniques to help you fully process experiences, putting them to words. In the following section you will learn many of the common pitfalls or "bugs" people encounter when processing these experiences, and ways of "bugfixing" them.

Verbalizing and investigating experiences can help you in so many ways. It can help reduce the stress you feel about a given situation. It can help you feel more in control and at ease. It can help you express your experiences to others. It can help you choose the best response for the situation. You also get the opportunity influence your future thoughts and feelings, through

deliberate thought.

Our ability to enunciate our experiences to ourselves and to others is extremely powerful. Words give experiences "handles" that we can use to inspect them, manipulate them, and figure out what's really going on. We can process experiences a lot more deeply and effectively by using accurate language than we can by using abstract wordless thoughts alone. You might verbalize an experience in several different settings, and each will have a similar effect. Just to name a few, you might verbalize an experience when think to yourself, or talk to a friend, or write something to an imagined-person.

We'll cover seven concrete techniques to help you better process experiences. Four of them involve processing your own experiences. Three others involve processing others' experiences, which helps you with the skills involved for processing your own as well. All of these have an overarching theme: "accept automatic thoughts and automatic emotions as inputs".

In the moment where you experience an emotion, it is already outside of your control and influence. In the system we described earlier (input, process, output), "you" are your conscious mind, and these "automatic emotions" are an input to your system. If you can accept these automatic emotions as data, that will

significantly help you process them.

It can take a lot of practice and training to accept emotions as input. It will get easier with time and repetition. If you want to practice this deliberately, you might consider a meditation practice. Many meditation practices actively focus on observing thoughts and emotions non-judgmentally.

Processing Your Own Experiences

Talk with a friend

One of the most powerful techniques for processing an experience is to talk with a close friend. This is also my personal favorite. Not only is it helpful for processing the experience, but it is also a bonding opportunity for the relationship.

Talking through an issue with a friend helps you more fully understand an experience by getting you to put it all into concrete words. If your actively listening friend can accurately reflect back to you what you're saying, that helps solidify the thoughts, helping your process it even further. Sometimes a friend will describe something in a different way than you, you may end up adopting some of their phrasing. When you have trouble

putting certain ideas into words, a friend can help you explore those. They might brainstorm different ways of describing it until something feels accurate and correct.

Here's an example of me talking with a friend. I start by asking the friend if they can help talk me through something, so they're ready for my unprocessed thoughts. Sometimes I end up rambling a bit, trying to figure out the right word, and my friend will offer help. For example, I might try: "I feel good about it. Excited maybe? Not quite excited. I do think it'll go my way, and that's a comforting feeling." My actively listening friend might suggest "are you feeling confident?" and in this case, they're correct! Or if not, we'll continue on until a description feels right.

Often you can find a single word for something. If not, you can at least find a phrase or sentence-long explanation of the feeling. Once you and your friend have a shared understanding, that really validates the experience. This shared understanding can help you feel like the emotion has been processed, and it can feel like a huge relief.

Talking with a friend can help you put an experience into words, and it can also help you feel better while doing so, too. Putting the experience into words can be a huge relief, especially when the experience is complex or troublesome. If they reflect back to

you accurately, that can make you feel understood by another person, and that can be very comforting. Being vulnerable is also a powerful way to deepen the relationship.

Talking with a friend is often the most powerful method of processing an experience. However, talking with an unsupportive friend could make you feel worse. The friend might inadvertently invalidate your experiences, making you feel more uncertain and shut-down. Later in this book there is an entire chapter dedicated to communicating in a validating way. Learning these validation skills can help you support your friends. Your modeling of effective validation and support might even help your friends learn how to support you in a helpful way.

Rubber duck

Don't have a friend around? Try talking to a rubber duck!

The "rubber duck debugging" technique is a common trick among software developers. You can gain a lot of insight into the problem by attempting to explain the situation to a rubber duck on your desk. Imagine the duck is sentient, and have a full conversation with it in your head. Especially imagine what questions it would ask, and what information it would need to know to be able to help. You can imagine the duck has the same context a coworker

would have, or no context at all. You can end up with a lot of the benefit you would get from talking with another person, without taking up their time.

Talking with the duck helps you notice assumptions you're making and enunciate them. Often the root of the issue can be found within these assumptions.

You can always fall back to actually asking the coworker or friend for help, and at that point you'll be able to explain the situation more accurately, clearly, and succinctly given the processing you already did.

Talking to a duck can "pre-process" your thoughts - partially process them before having a friend help you process them the rest of the way.

Before I talk with a coworker, I try and think of what questions they would ask me to get enough context on the issue to be able to help. Before I take up their time, I'll often try to predict what questions they would ask, and what assumptions they would need to know about. Often just by thinking through these I end up discovering exactly what I needed to know to figure out the situation, and I don't even end up needing to talk with them! Even though I use this technique so often, I'm still so surprised every time it helps. It really does.

Rubber duck debugging is often a tool used in work environments, but you can apply the same idea to personal experiences too. You can change the imagined-audience to be your best friend, a family member, or someone else as appropriate to the situation. And if you can't think of an existing person who would be particularly appropriate, you can even imagine up someone new.

Journaling

Talking with someone (real or imagined) is a poweful technique, but sometimes an issue requires even more. Writing can help you go even deeper on an issue. Writing encourages you to use only the most accurate terms. Writing also enables you to go back and edit things until it feels correct. When re-reading what you've written you can often tell what feels right and what feels off.

Journaling is the third tool in your toolbelt. You can journal to yourself, future-you, past-you, or even to the journal itself. In some ways it's like writing the rubber duck we described earlier.

You don't need a physical journal to practice "journaling". Some people prefer physical journals, but others like to journal using a computer. My favorite place to journal is in an email draft message. It is quick to load, and doesn't have any frills to get in

the way.

EMAIL

Often I'll start an email draft by addressing it to myself, but imagining I would send it to a coworker.

[EMAIL TECHNIQUE?]

You can do this all out loud (if you dare), quietly in your head, or even in writing. I accidentally use this technique a lot. Often I'll start an email draft or instant message to a coworker explaining the situation and asking for their input, and then I end up not needing to send it at all!

You can use the rubber duck when you have a specific issue to process.
Journaling I mean WRITING and also DOING IT REGULARLY

You can also talk with yourself. Writing is more effective than thinking alone - it activates a different part of the brain, and makes you really nail down thoughts and feelings.

Sometimes I imagine writing to future-Casey or past-Casey. Sometimes I imagine writing a friend, like I mentioned above. I write out all my thoughts and all my emotions in stream of consciousness, putting it all to words. I try to use really specific emotional

words so I can really deeply understand it. I also try and identify maladaptive thought patterns, which we'll cover in the next section.

My biggest tip is to make it easy for yourself to journal. Many people keep a paper journal handy at home. My favorite way is journaling into a gmail draft message. Somehow that loads faster than Google Docs or Microsoft Word, and it also feels more temporary.

Every time I journal I feel surprised how much it helps. You might imagine that thinking to yourself is similar, but somehow writing is a very different experience. When writing, you can pin more things down, and get a lot deeper and farther along with processing.

There is a major risk with journaling, and that's rumination. Rumination is when you focus on the causes and consequences of something, instead of solutions. If you are too fixated on the negative, it can cause a downward spiral and make you feel even worse. Ideally you will develop techniques to be able to journal more effectively. Accepting inputs as things you cannot change, and identifying maladaptive thought patterns like we'll do in the next section. You could accidentally reinforce maladaptive thought patterns if you're not careful, or if you're not in the right

mindset to deal with them. If that's the case, you may want to try another technique, or try again later.

Meditation

Some people describe meditation as the art of sitting with your thoughts and feelings, not judging them or holding on to them too strongly. Practicing meditation can help you become more aware of your thoughts and emotions. Unlike many of the other techniques here, meditation isn't a great time to actively think about and process these automatic feelings - but it is useful for helping you become aware of them.

Rumination is a risk with meditation just as it is with journaling, and perhaps even more so. Sitting with these normally-unseen thoughts and feelings can be stressful in the first place. It's also easy to judge these and accidentally kick off a downward spiral, making yourself feel worse.

The risk of becoming stressed from meditating is especially high for beginners. With practice, you will get better at not judging your thoughts and feelings. This sort of stress sometimes happens to experts too, although less often. Stress is more likely to happen when in a particularly challenging situation, or when mentally (or bodily) fatigued.

If you'd like to try getting into meditation, there are a lot of resources to help you get started in a gentle and gradual way. My favorite introduction to meditation lately is a mobile app "Headspace". It introduces meditation concepts one at a time, using voice guidance and cute little videos and animations. I learned a lot from the intro series on Headspace (10 sessions), which were free when I did it at least.

Processing Others' Experiences

Reading fiction

Most people agree that reading nonfiction can be "useful". Nonfiction teaches us facts. People are more divided about how useful fiction is. Fiction may not teach as many facts, but it is often "useful" for social and emotional learning!

Fiction books give us the opportunity to peer inside another person's mind. We get to see the results of interactions they have with others. These characters often act in ways or in situations we wouldn't experience ourselves. Their thoughts and feelings are often quite different from how we would react in that situation. Reading fiction helps you think about ways in which others might

think differently from you.

The only way the author is able to convey these thoughts and feelings is to describe them using words. If you pick up on any of the vocabulary or wording, that could help you put your own thoughts and feelings into words.

Studies often use "narrative transportation theory" when discussing this. The term "high emotional transportation" means a stories where the reader imagines they are immersed in the world, empathizing with the characters more deeply. Some studies show that people who have recently read "high emotional transportation" books have greater empathy than those who read something without high emotional transportation.

Try reading some fiction! You don't need to read from a high school English class curriculum; popular fiction totally counts. The last book series I got totally immersed in was The Hunger Games. If you need an idea, maybe start with something from the top 10 bestsellers list for this year. You probably even know a person or two who has read one of those, and you can bond over that.

Emotional vocabulary

Expanding your emotional vocabulary can help deepen this effect a lot. Children are usually taught the most simple emotions first – like happy, sad, angry, tired – and later they learn how to describe more complex emotions. Generally people understand a huge number more words than they regularly use, and this applies to emotional vocabulary as well. With some practice, you can learn to use a much richer emotional vocabulary.

The more often you deliberately use more specific terms, the more often your mind will automatically use them as well. Nudging your automatic thoughts in this direction can substantially change the way you process experiences. The line between automatic and deliberate thoughts can feel blurry when you're working on this, and that's okay - it's a gradual process.

One tool you can use to expand your emotional vocabulary is a emotion thesaurus chart. Keep a reference like this one somewhere handy; print this one out, or save it to your desktop. There are many more resources like this online - some in circular graphs, some with more colors.

The next time you are trying to describe your emotions (whether to yourself or to someone else!), try out the reference. It might

have just the right word to describe something, or it at least might help you get closer to the right word. If the chart doesn't help enough directly, you might try a traditional thesaurus, or ask a friend or two how they would describe it.

Homework

- Print out the emotional vocabulary chart from this article, to have it handy next time you need it. If you can't print it, make it accessible somehow: save it to your desktop or email it to yourself and star it.
- (optional) look for others to print, too - there are a lot of these available.
- Try processing emotions a bit each day this week. Try a different tactic each day this week:
- Schedule a time with a friend to talk about your feelings
- Discuss a problem with a "rubber duck" for 10 minutes
- Journal for 10 minutes once
- Meditate (at least 3 sessions). Perhaps using the Headspace app for guidance.
- Read more about the Six Levels of Validation
- This high-level overview article
- Or this original source (download pdf) from "Validation

and Psychotherapy" by Marsha Linehan, 1997.

- (optional) Choose a fiction book to read after this one. An audiobook counts, if you prefer.

Communicating Validation

If you want to help support others emotionally by listening, you should communicate validation yourself. My favorite tool for thinking about validating is Dr. Linehan's "Six Levels of Validation". These are her six levels of validation, in order of increasing impact:

1. Be present

- Just being present in the moment with your friend can be validating on its own. This could be active listening, or even as little as just being physically present if nobody is talking.

1. Accurate reflection

- You might sometimes ask "how do you feel about _____?". Your friend will describe their thoughts and feelings. If you can communicate it back to them accurately, that can be very validating. Sometimes you may even describe it back in a way that inspires a change in the way they think about

it. Be careful to leave plenty of room for them to correct you, or it could backfire and make them feel invalidated instead.

1. Guessing about unstated feelings

- If your friend is not able to communicate something clearly or fully enough, you may be able to help them out. You can ask "are you feeling _____? or _____?" to help them refine the way they think about the situation. Doing this well is generally more validating than levels 1 or 2. Be careful though, because if they aren't comfortable correcting your guess this could backfire and make them feel invalidated.

1. Validate in terms of past history

- You can communicate to your friend that their current response makes sense, given their past. If a friend was bit by a large dog as a child, it makes sense that they might still be afraid of large dogs as an adult.

1. Validate in terms of present events and the way most people would react

- You can communicate to your friend that their response makes sense given the situation. Talking through the details of the situation you might decide that anyone in this

situation would have reacted in a similar way. If your friend is afraid of holding a snake, that is totally unsurprising - so many people are afraid of snakes.

1. Radical genuineness

- READ LINEHAN AGAIN

I recommend reading more about this and trying this out. It's not a strict scale of what you should use, but it's a really helpful tool when considering how to respond to a friend who is being vulnerable with you. My favorite high-level overview of this is this article by Karyn Hall. If you want a more thorough overview right from the source, you might consider reading this chapter from "Validation and Psychotherapy" by Marsha Linehan, 1997.

Close Relationships

Hopefully you have several close friends you can readily talk to about your thoughts and feelings. Studies show that the more close connections you have, the healthier you are, the longer you live, and the more resilient you are in the face of stress. The list of positive benefits of social connectedness goes on and on.

There is a recent "loneliness epidemic" in the US. source. You may feel like you have many (or any?) close friends you can have

intimate discussions with. If so, consider making it a priority to have more, deeper relationships. This can be difficult, but it is well worth the effort.

Ideally your emotionally supportive relationships are reciprocal. You should also offer to talk friends through issues they're having as well. Assuming this discussion all goes well, being vulnerable like this with each other can dramatically improve your relationship. It can deepen feelings of trust with each other.

My favorite technique for making your friends supportive is to communicate validation and acceptance explicitly. There will be an entire section about this later.

Too Much?

Sharing your emotions with others is often really good for you, and it can bring you closer together. There is an extreme though, which could be a problem. It is possible to impose too much, expecting your friend to do "emotional labor" for you in a way that they could resent. If the support is one-way (they support you more than you support them), that makes it much more likely your friend would feel frustrated. If there's an imbalance in how much each of you need in the first place, that could be an issue too. Prioritize communicating with your close friends

about these concerns to set healthy boundaries.

A friend's support can go a long way, but for deeper issues or trauma friends may not be enough. Therapists are trained to help with this. Think about whether this support is enough, or if a therapist might help more. If you haven't tried therapy, you should seriously consider at least being screened.

Read More

{% include debugging_your_brain_toc.md %}