

Well, I can't.

## Executive Function - 3: Cognitive Flexibility

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Nico, I don't know how you manage to do so many things at a time! Video games, social media, texting, radio program...

Hmm? Well, I don't do actually do everything at the same time. For instance, while I'm wait for my friends to text me back on tonight's plans, I'm playing games. While playing, I pause occasionally to check Facebook when I receive a notification. As regards to the radio program, I'm not attending to it completely. I only zoom in on the content if something sounds interesting. So, in fact, with all these activities, what I'm actually doing is switching quickly from one task to another.

That's okay Maya, it's normal to not focus on many things at Once. Yesterday, while you were shopping with Grandma. Mommy explained to me that the ability to switch one's focus between tasks is called 'Cognitive Flexibility'. You know, to do this, it requires a lot of working memory and a good ability to inhibit distractions. Do you remember when Mom said that your working memory hasn't yet to achieve it's highest potential? Well, it definitely applies for the case of cognitive flexibility.

intraparietal

sulcus

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premotor

frontal sulcus

anterior insula / frontal operculum

cortex

Well, whatever, I don't need it!

Ha! Don't be so sure about that. Cognitive Flexibility doesn't simply help you switch between tasks but also helps you to switch between points of view, to take a different perspective.

Let's take as an example, our spatial point of view. Can you try to image what the room would look like if you were standing next to the plant, as oppose to where you are now?

You could also consider things from an intrapersonal point of view. For instance, how you create images in your mind while thinking. Hrm, let's imagine: If he goes out tonight, who will play video games with me?

pre-supplementary

motor area /

inferior anterior cingulate



Urm, but I don't understand how the ability to change points of view is related to inhibition and working memory.

Think about it. To change your point of view, your first need to deactivate your current point of view - this is the role that inhibition plays. Then, to adopt a new point of view you need to put in new piece of information in your mind, making use of your working memory.



In other words, this flexiblity allows us to solve a problem with a different strategy when the current strategy does not work. Actually, for tonight's plans, I should realise that my friends ability to make use of cognitive flexibility will likely results in a slow decision for tonight's plans.

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Let's see, Marc doesn't like change and so he has a hard time adjusting his agenda. Joe doesn't want to admit it was a bad idea to book the laser tag game at an inconvenient location. Then there's Jerome who didn't even consider asking his uncle, who will pass by his house anyway, to come a bit later and give us a ride to laser-tag.



Nico, is currently making use of his cognitive flexibility in multiple ways. He considers the different alternatives that his friends could take. He also places himself in Maya's shoes, he is taking her perspective. In doing so, he is displaying empathy for the ability to to understand another person's feelings.

Don't worry, Grandma's cognitive flexibility can't be that great anymore because, unfortunately, it depreciates with age.

You know what? You're right. What's the point of switching between several task if most of them are rather pointless. Let's put away the social media, the texts, turn of the radio and... How about we

I don't know, she seems to be in a good shape though!



play a video game

Editing : Adeline Lucchesi - Caroline Saunier - Jessica Massonié - Nietzsche Lam References:

- Brain mechanisms of flexible cognition https://www.psy.ox.ac.uk/research/duncan-lab

- Diamond, A., and Ling, D.S. (2016). Conclusions about interventions, programs, and approaches for improving executive functions that appear justified and those that, despite much hype, do not. Developmental Cognitive Neuroscience

Aagg.. that's what I was

thinking. Yes, let's play.