



Part One: The Spear Point of Rewiring Our Brains

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In my last three posts I wrote in some detail about the principles of neuroplasticity. In order to use these principles to our advantage we need to consciously use directed neuroplasticity, which requires us to be attentive as to where we place our focus.

It is focused attention which creates change in the structure and organisation in the brain. The key is to understand how attention functions and to work within it's finite limits.

Consider little Bobby who is four-years old and sitting at a table staring intensely at a tantalising white marshmallow only a short arms-distance away. There is no one else in the room. It's just him and the marshmallow. Let's take a moment to rewind. Two minutes ago a researcher in a white-lab coat was sitting across from Bobby and gave him a choice. "Bobby, after I leave the room you can either eat the marshmallow right away or you can wait until I come back and I will give you two". The researcher then got up from his chair and exited the room.

So let's now fast forward back to the present. There's little Bobby confronted with quite the dilemma. Does he devour the yummy, fresh, soft marshmallow or should he wait and get two? He looks at the clock. Tick. Tock. Time has never moved so slow for Bobby as it does at this very moment. From the monitor in the next room the researcher can see the furrowed brow as Bobby is contemplating his next move. It seems resistance was futile. Bobby gives in to his tastebuds and devours the marshmallow in two bites.

This same experiment was conducted with hundreds of children. Most of them used on average two-minutes before they gave into the allure of the marshmallow. Only about one-quarter of the children were able to resist eating the marshmallow until the researcher returned to the room.

Years later when they followed up the children from the study the researchers discovered those children who had managed to hold out for the second marshmallow grew up to have more successful lives than those children who couldn't wait. These children were found to have a greater likelihood later of having behavioural challenges. The researchers also found that as adults those children found it difficult to hold their attention and to control their emotions.

Years later the researchers at the University of Rochester conducted the classic marshmallow study again, but this time with a slight twist. This time

they randomly divided a group of 28 children, between the ages of 3 to 5 years old, into two equal groups.

<http://www.youtube.com/watch?v=JsQMdECFnUQ#t=132>

The first set of children were put through the 'unreliable' condition. They were provided with a closed jar of used crayons. The researcher told each child if they could wait until he/she shortly came back they would get a set of bigger and better crayons and new art supplies. The researcher then left the room and returned two and half minutes later with their hands empty and apologized to the child. The researcher said he had made a mistake and told the child they could still use the old crayons in the jar.

The second set of children were put through the 'reliable' condition. It was the exact same set-up, but instead the researcher returned with the bigger and better crayons and the new art supplies. Immediately after the crayon experiment the researchers conducted the classic marshmallow test. Each child was given the same instructions as their predecessors were when they first ran the test years ago - if they waited for the researcher to return before they ate the first marshmallow then they would get two.

Those children who went through the 'unreliable' condition waited an average of 3 minutes before reaching for the marshmallow. Those children who had undergone the 'reliable' condition waited an average of 12 minutes. Only one child in the 'unreliable' condition waited for the full 15 minutes compared to 9 kids in the 'reliable' condition.

This experiment showed that self-control was not the only determining factor. It was also based on how the children rationalised the situation to themselves which in turn was influenced by their prior experience with the crayons. So those children in the 'reliable' condition where their expectation of receiving new crayons and art supplies was met tended to hold out longer for the second marshmallow. On the other hand, the children in the 'unreliable' condition whose expectations were not met were likely to eat the first marshmallow then wait for a second that may never come.

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