SELF-CONTROL PART I

PSY013110 (Term 2/2024)

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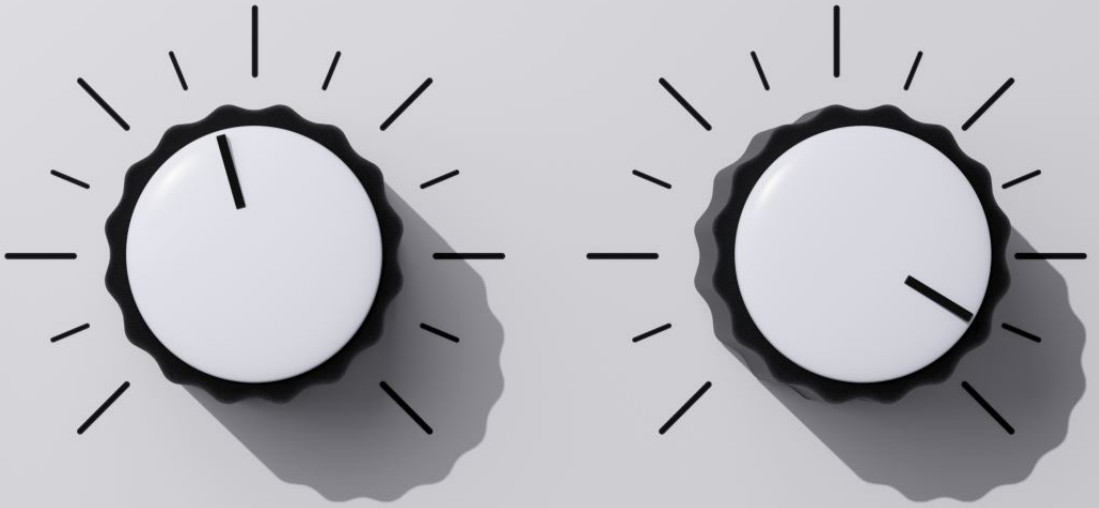
Dept of Psychology, CMU



Self-control

- "The capacity for altering one's own responses, especially to bring them into line with standards such as ideals, values, morals, and social expectations, and to support the pursuit of long-term goals" (Baumeister, Vohs, & Tice, 2007)
- "Overriding or inhibiting of automatic, habitual, or innate behaviors, urges, emotions, or desires that would otherwise interfere with goal-directed behavior" (Muraven, Shmueli, & Burkley, 2006)
- "The ability to regulate current thoughts, feelings, and behavior to secure future benefits" (De Ridder, Adriaanse, & Fujita, 2018)

- Based on the above definitions, **self-control can refer to an ability to regulate or change one's cognitive, emotional, and behavioral responses to increase chances of achieving one's goals**

"Self-control is most often required when people are faced with **self-control dilemmas**: situations in which a conflict between two different behavioral tendencies needs to be resolved"

Gillebaart & de Ridder (2015)

Gillebaart, M., & de Ridder, D. T. D. (2015). Effortless self-control: A novel perspective on response conflict strategies in trait self-control. *Social and Personality Compass, 9(2),* 88-99

The marshmallow test

- Walter Mischel and colleagues at Stanford University
- Wanted to understand **willpower**, especially delay of instant gratification
- Research idea originated from his observation of his own 3 daughters growing up:
  - "I watched each of my three closely spaced daughters… quickly morphed from mostly gurgling or screaming… to becoming people with whom one could have fascinating, thoughtful conversations. In just a few years they could even sit more or less still to wait for things they wanted, and I tried to make sense out of what was unfolding in front of me at the kitchen table."

Image source: https://www.thetimes.co.uk/imageserver/image/%2Fmethode%2Ftimes%2Fprod%2Fweb%2Fbin%2Ff7a55d726-cfe1-11e8-b8d4-d6fb90acb7b1.jpg

Photo by Arina Krasnikova: https://www.pexels.com/photo/heap-of-various-sweet-marshmallows-on-white-table-7002978/

The marshmallow test

- Stanford U's Bing Nursery School
  - "Surprise Room"
- Preschool children are presented with a marshmallow (other sweets can be used too). They can eat it straight away or they can wait (while the adult is away for approx. 15 minutes) and get 2 marshmallows later

https://www.youtube.com/watch?v=QX_oy9614HQ&ab_channel=IgniterMedia

THE MARSHMALLOW TEST

The marshmallow test

- The Stanford longitudinal studies of delay gratification
  - 550+ preschool children took the Marshmallow test during their time at Stanford University's Bing preschool between 1968-1974
  - Questionnaires asked parents, teachers, academic advisors about the participants' impulse-control related behaviors & characteristics
  - Participants (who could still be reached) were followed up every 10 years after their original testing (by now, these participants would be in their 50s)

The marshmallow test

Distraction strategies

- When the rewards (marshmallow) are exposed, the temptation is great and it is hard for children to wait, whereas it is easier for children to wait when the rewards are covered
- Children who successfully wait for the return of the experimenter tend to come up with ways to distract themselves, e.g., sing a song (might come up with their own songs), make funny faces, play with their hands, or just close their eyes (so that they do not see the marshmallow)

Photo by Anna Shvets: https://www.pexels.com/photo/photo-of-a-boy-covering-his-eyes-3771679/

The marshmallow test

Photo by JACK REDGATE: https://www.pexels.com/photo/person-holding-s-mores-2929197/

Hot vs. cool focus

- **Hot focus** – arousing, motivating qualities, e.g., the marshmallow is chewy, sweet
- **Cool focus** – abstract, non-emotional information/features of stimuli, e.g., the marshmallow is round, white

- Children can wait twice as long when they are prompted to focus on cool features as opposed to hot features

The marshmallow test

Ability to control one's impulses or delay gratification has been found to be associated with certain later outcomes

In adolescence

- Better self-control in frustrating circumstances
- Less likelihood to give in to temptation
- Better concentration
- Higher intelligence, self-reliance, and confidence
- Less likelihood to fall apart under stress
- More planning
- Better academic achievement (e.g., higher SAT scores)

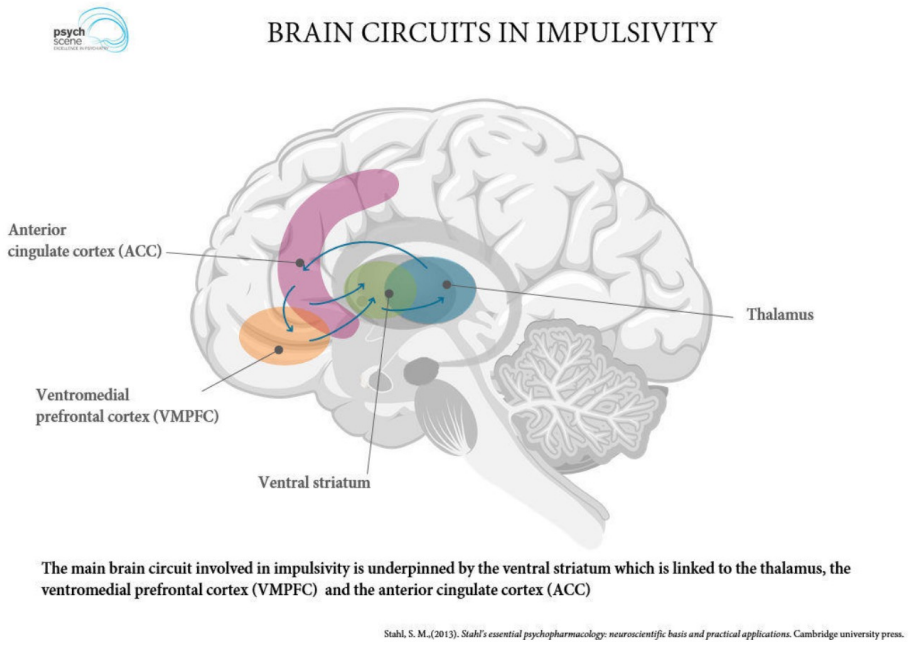
The marshmallow test

Ability to control one's impulses or delay gratification has been found to be associated with certain later outcomes

In adulthood

- Higher likelihood to achieve long-term goals
- Higher educational levels
- Less likelihood to use substances
- Lower body mass index
- Better interpersonal skills (e.g., ability to maintain close relationships)

The marshmallow test – it shows in the brain!



The main brain circuit involved in impulsivity is underpinned by the ventral striatum which is linked to the thalamus, the ventromedial prefrontal cortex (VMPFC) and the anterior cingulate cortex (ACC)

Stahl, S. M.,(2013). *Stahl's essential psychopharmacology: neuroscientific basis and practical applications.* Cambridge university press.

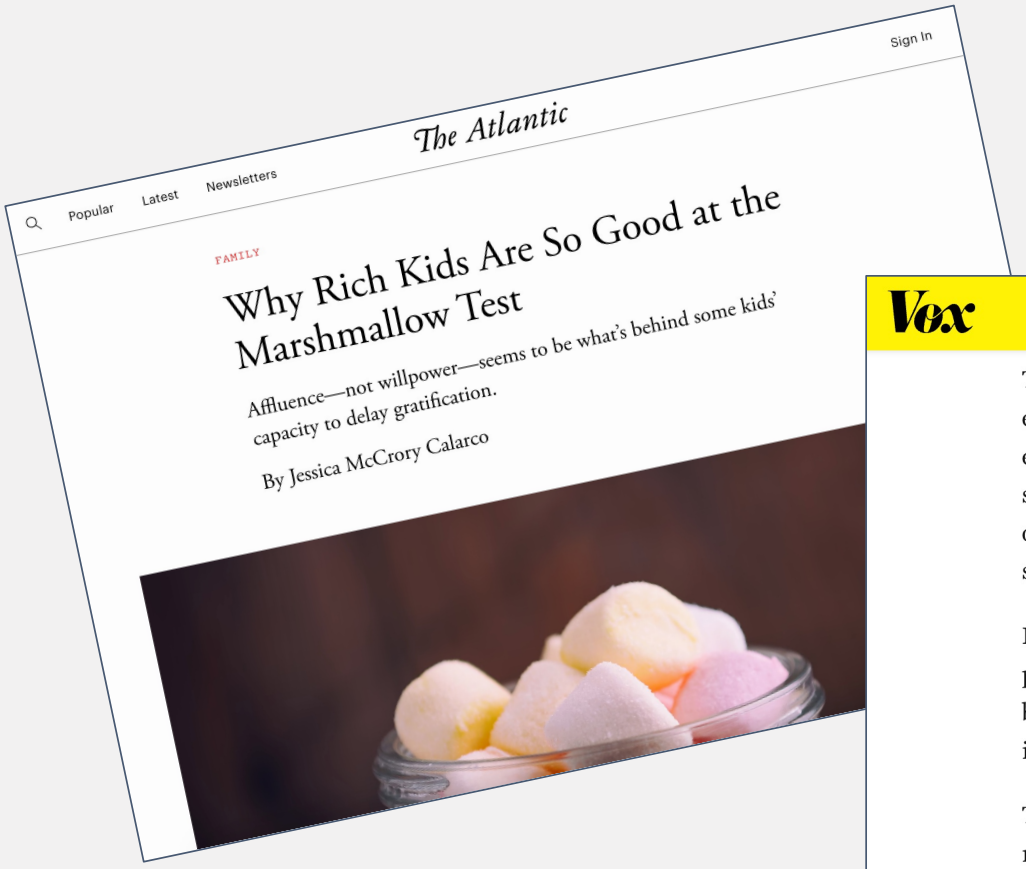
- Frontostriatal brain circuitries (motivational and control processes)
- **High delayers**
  - Prefrontal cortex was more active (executive function—problem solving, creative thinking, control of impulsive behaviors)
- **Low delayers**
  - Ventral striatum was more active (desire, pleasure, addictions)

https://psychscenehub.com/psychinsights/neurobiology-of-binge-eating-disorder/

THE MARSHMALLOW TEST REVISITED

More recent studies using the marshmallow test have found that it might not be solely about self-control; there are other relevant factors that influence children's ability to wait

Photo by Tuyền Nguyễn: https://www.pexels.com/photo/colorful-marshmallows-on-table-15569692/



Vox

The "marshmallow test" said patience was a key to success. A new replication tells us s'more.

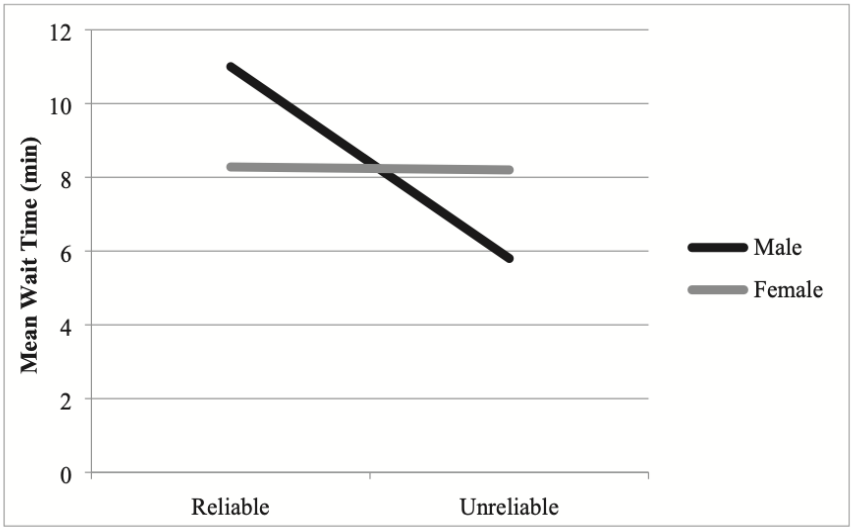
That means "if you have two kids who have the same background environment, they get the same kind of parenting, they are the same ethnicity, same gender, they have a similar home environment, they have similar early cognitive ability," Watts says. "Then if one of them is able to delay gratification, and the other one isn't, does that matter? Our study says, 'Eh, probably not.'"

In other words: Delay of gratification is not a unique lever to pull to positively influence other aspects of a person's life. It's a consequence of bigger-picture, harder-to-change components of a person, like their intelligence and environment they live in.

The results imply that if you can teach a kid to delay gratification, it won't necessarily lead to benefits later on. Their background characteristics have already put them on that path.

What's more, the study found no correlation — even without controls — between delaying gratification and behavioral outcomes later in life. "In that sense, that's the one piece of the paper that's really a failure to replicate," Watts says.

The marshmallow test revisited



Moffett, Flannagan & Shah (2020)

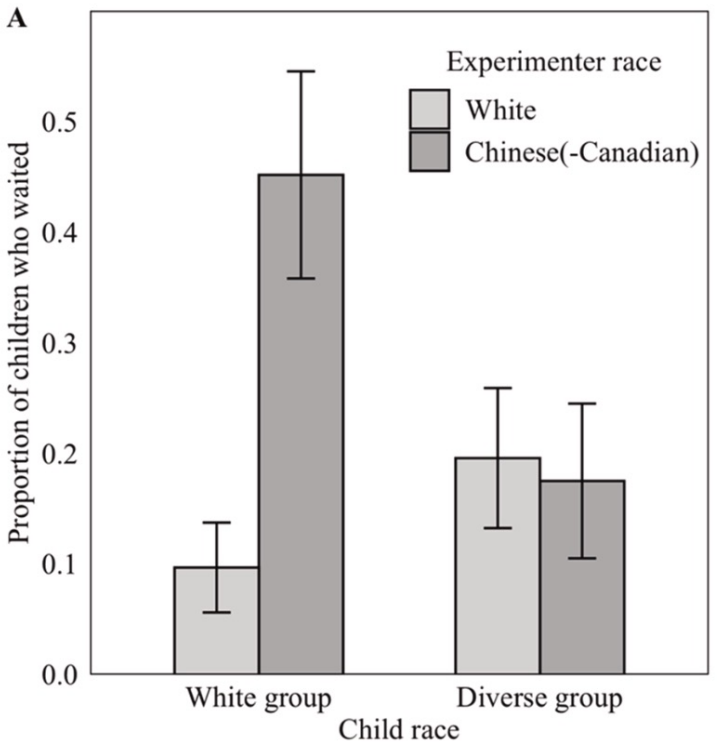
- Extension of a study by Kidd and colleagues (2013) → **reliable vs. unreliable experimenters** (this study had a small sample of participants, n = 28)
- Sample = 60 children (average age = 4.5 y.o.) (1 was later excluded from the excluded from analysis due to some procedural issue during the experiment)
- Prior to the marshmallow task, children are exposed to reliable experimenter (keeping their promise) vs. unreliable experimenter (not keeping their promise)
- Result: **On average, children in the reliable condition wait approx. 10 min, whereas children in unreliable condition wait approx. 7 min**
- Gender difference: boys vs. girls – boys seem more sensitive to experimenter reliability than girls do

Moffett, L., Flannagan, C., & Shah, P. (2020). The influence of environmental reliability in the marshmallow task: An extension study. *Journal of Experimental Child Psychology, 194,* 1–14.

The marshmallow test revisited

St. Pierre, White, & Johnson (2023)

- The study seems to originally focus on linguistic cues (whether experimenters are native English speakers or not—Canadian Eng, Eng with Ukrainian accent, Eng with Chinese accent)
- Children (3-5 y.o.) in the study are ethnically diverse but are predominantly exposed to English in real life (identity: white vs. diverse)
- Identity of the experimenter (White Canadian vs. Chinese Canadian)
- Results: **(White) children who were told by an experimenter of a different race seem to wait longer**
- Potential explanations: children might feel less comfortable (more anxious or wary) with experimenter of different race and feel less at liberty to eat the marshmallow immediately



St. Pierre, T., White, K. S., & Johnson, E. K. (2023). Who is running our experiments? The influence of experimenter identity in the marshmallow task. *Cognitive Development, 65,* 1–13.

The marshmallow test revisited

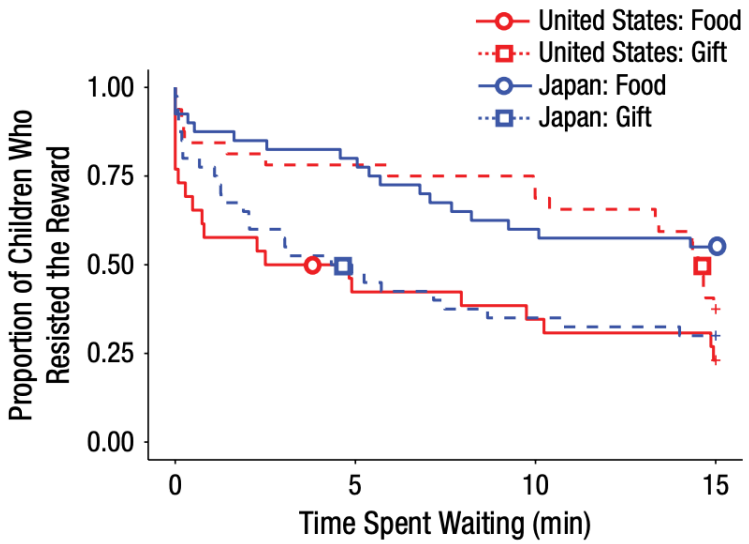


Fig. 1. Survival functions showing the proportion of children in the United States and Japan who resisted the reward as a function of delayed gratification (time spent waiting) in the food and gift conditions. Circles and squares show median wait times.

Yanaoka et al (2022)

- In Japan, children (n = 80) waited 3x longer to eat food > open gifts
- In the US, children (n = 58) waited ~4x longer to open gifts > food
- May reflect differences in cultural habits rather than ability to resist temptations

Source: Yanaoka, K., Michaelson, L. E., Guild, R. M., Dostart, G., Yonehiro, J., Saito, S., & Munakata, Y. (2022). Cultural crossing: The power of habit in delaying gratification. *Psychological Sciences, 33(7),* 1172–1181.

LET'S FIND OUT
HOW MUCH
SELF-CONTROL
YOU THINK YOU HAVE...

brief self-control scale

your name: _____ *today's date:* _____

using the 1 to 5 scale below, please indicate how much each of the following statements reflects how you typically are:

not at all ***1*** ***2*** ***3*** ***4*** *very much* ***5***

	type of activity	***frequency***
1.	I am good at resisting temptation	
2.	*I have a hard time breaking bad habits*	
3.	*I am lazy*	
4.	*I say inappropriate things*	
5.	*I do certain things that are bad for me, if they are fun*	
6.	I refuse things that are bad for me	
7.	*I wish I had more self-discipline*	
8.	people would say that I have iron self-discipline	
9.	*pleasure and fun sometimes keep me from getting work done*	
10.	*I have trouble concentrating*	
11.	I am able to work effectively toward long-term goals	
12.	*sometimes I can't stop myself from doing something, even if I know it is wrong*	
13.	*I often act without thinking through all the alternatives*	

italicised questions (2, 3, 4, 5, 7, 9, 10, 12, 13) should be reverse scored (subtract score from 6).

total score (13-65) =

average (mean) score for 606 students was 39.5, with approximately 70% falling in the range 31 to 48, and approximately 95% in the range 22.5 to 56.

Tangney, J. P., R. F. Baumeister, et al. (2004). "High self-control predicts good adjustment, less pathology, better grades, and interpersonal success." J Pers 72(2): 271-324. What good is self-control? We incorporated a new measure of individual differences in self-control into two large investigations of a broad spectrum of behaviors. The new scale showed good internal consistency and retest reliability. Higher scores on self-control correlated with a higher grade point average, better adjustment (fewer reports of psychopathology, higher self-esteem), less binge eating and alcohol abuse, better relationships and interpersonal skills, secure attachment, and more optimal emotional responses. Tests for curvilinearity failed to indicate any drawbacks of so-called overcontrol, and the positive effects remained after controlling for social desirability. Low self-control is thus a significant risk factor for a broad range of personal and interpersonal problems.

Components of self-control

Inhibitory component

(inhibit = hinder, prevent, restrict)

- More common in studies on self-control
- Resist the temptations
- E.g., not giving in to the urges to play video games instead of study, not sending flirty DMs when in a relationship

Initiatory component

(initiate = cause a process/action to begin)

- Not just the opposite of inhibiting impuluses (*not eating sweets is not equal to eating more fruits*)
- Start doing things that contribute to one's long-term goals
- E.g., doing homework, exercising

State vs. Trait Self-Control

State/situational self-control

- Self-control ability varies across situations, as there are situational influences, such as mood, motivation, working memory capacity

Trait/dispositional self-control

- Individuals' trait self-control is believed to remain relatively stable across situations and time
- If A has higher self-control than B, A would be expected to manage their behavioral responses better than B across situations

De Ridder, D. T. D., Lensvelt-Mulders, G., Finkenauer, C., Stok, F. M., & Baumeister, R. F. (2012). Taking stock of self-control: A meta-analysis of how trait self-control relates to a wide-range of behaviors. *Personality and Social Psychology Review, 16(1),* 76–99.

Strength Model of Self-Control

Baumeister and colleagues

- Self-control is believed to be effortful
- Self-control resource is limited, and this affects one's self-control ability
- Resource can become depleted after engaging in self-control behavior
- Once resource is depleted ("*ego depletion*"), self-control ability also reduces

- However, the strength model of self-control would imply that people who engage in self-control behaviors are more likely to fail in their subsequent attempts (because their resource is reduced each time they do)

Baumeister, R. F., Vohs, K. D., & Tice, D. M. (2007). The strength model of self-control. *Current Directions in Psychological Science, 16,* 351-355.

MAIN REFERENCES

- De Ridder, D., Adriaanse, M., & Fujita, K. (2018). *The Routledge International Handbook of Self-Control in Health and Well-being: Concepts, Theories, and Central Issues.* Routledge.
- Mischel, W. (2014). *The Marshmallow Test: Mastering Self-Control.* Little, Brown and Company.