Summary of Procrastination and Obedience
George A. Akerlof (1991)

Introduction

- Purpose: to discuss and illustrate the pathology of 1) procrastination indecision making and 2) undue obedience to authority
- Focus: situations involving repeated decisions with time inconsistent behavior.
- Individuals choose a series of current action without fully understanding how those actions are going to affect future perceptions and behavior → assumption of rational, forward looking individuals is violated → cannot assert that individuals are maximizing their true utility or that options that are chosen are preferred to the options that are not chosen
- Principle in modern cognitive psychology: individuals attach too much weight to salient or vivid events and too little weight to nonsalient events (In other words, present benefits and costs are more salient compared to future costs and benefits)
- Procrastination & Obedience: sequences of small errors cumulate into serious mistakes
  - Procrastination occurs when present costs are salient compared to future costs
  - Undue obedience occurs when individuals' disutility for disobedience is more salient
- Why studying about procrastination and obedience is important:
  - Pathology of: inadequate savings for retirement, substance abuse, criminal and gang activity, procrastination in corporate culture etc.
  - policy implication: because individuals might have been choosing options that do not maximize their true utility, they might be made better off if their choices are limited

Salience and Decisions

- Thought experiment on buying a car (Nisbett & Ross, 1980)
- Salient information influences individual's decision in choosing electives (Borgida & Nisbett, 1977)

Procrastination

- Future costs and benefits are not salient compared to present costs and benefits→errors of judgement→presently small loss but cumulatively large losses
- Akerlof's personal story of procrastination
  - A friend came to visit him in India from the US and left with him a box of clothes

that was to heavy for a carry-on luggage. Akerlof procrastinated sending a parcel to a friend, thinking he would send it the *next* day for eight months until he eventually decided he would include it in the shipment of another friend who would return to the US the same time as him.

- Mathematically, the story can be presented as follows:

The box was left on day 0. The end of the year is marked as T.
When $t < T$, cost of sending the box is c.
When $t = T$, cost of sending the box is 0.
Friend's benefit from the box is $(T - t^*)x$, when t^* is the day he planned to send the box and x is benefit per day of his friend.
Present cost for sending the parcel $c(1 + \delta)$; when δ is the salience premium. When $t + 1 \leq t^* < T$, $\delta = 0$

On any day t, he chooses the day he is going to send the box:

1) send in on that day $(t^* = t)$
   Net cost $V_1 = c(1 + \delta) - (T - t)x$
2) send it some other day prior to departure to the US $(t + 1 \leq t^* < T)$
   Net cost $V_2 = c - (T - t^*)x$
3) bring it along on the day of departure $(t^* = T)$
   Net cost $V_3 = 0 - (T - T)x = 0$

On day t, sending it on that day would cost him $V_1 = c(1 + \delta) - (T - t)x$, but if he procrastinates to the next day (t+1), it would cost $V_2 = c - (T - (t + 1))x$ instead. It would cost him more to send it on that day, i.e. $V_1 > V_2$, when

$$c(1 + \delta) - (T - t)x > c - \big(T - (t + 1)\big)x \rightarrow \delta c > x$$

Or intuitively, the condition for procrastination to occur is when the perceived cost (cost and its salience) exceeds the box's benefit per day.

He would stop procrastinating to some other day and decide to bring it along instead when cost of sending it some other day exceeds that of bringing it along, i.e. $V_2 \geq V_3$, or

$$c - (T - t^*)x \geq 0 \rightarrow \ t^* \geq T - \frac{c}{x}$$

The day in which inconsistent behavior stops to occur is called "the critical day."

There are three features of the situation

1. The time between each decision is short, resulted in small x
2. There is small "salience premium", δ
3. Dynamic consistency, i.e. no rational expectation

Combining 1. And 2., the condition for procrastination, $\delta c > x$ holds.

As a result, cumulative losses from procrastination is determined by the difference between the cost of sending the box on day 0 and that on the day it was actually sent, which is day T. The loss can be expressed mathematically as follows:

$$0 - \{c(1+\delta) - Tx\} = Tx - c(1+\delta) \approx Tx - c$$

Or it can also be said that the loss is the product of x and the time he delays sending the box $T - \frac{c}{x}$, which is $Tx - c$.

The size of salience premium can be estimated using numerical example. Suppose the author valued his cost of sending the box(opportunity cost) is \$50 per day and his friend's use of his box at \$0.50 per day. Under the procrastination condition, procrastination shall occur if δ exceeds $x/c = 0.5/50 = 0.01$. If the time of the author's return to the US is on day 365, procrastination will occur for $T - c/x = 365 - 50/0.5 = 265$ days.

The preceding model has a unique feature that if the task is not done in a timely fashion, it does not need to be done at all. However, many tasks have deadlines. Suppose a project would require Th hours of labor to complete without procrastination and the daily utility cost of doing a project depends on the square of the number of hours worked per day(h). Without procrastination, the total utility cost of the project is $U = Th^2$. However, for a procrastinator, there is salience cost to begin the project on that day.

On any day t, a person can choose whether to start the project. The cost of starting the project would be:

1. Start on that day
   $V_1 = \delta h^2 + \sum_{t=\tau}^{T} e_t^2$; where e_t is the number of hours worked on day t
2. Procrastinate to the next day
   $V_2 = \sum_{t=\tau+1}^{T} \varepsilon_t^2$; where ε_t is the number of hours worked on day t

Assume $e_\tau = e_{\tau+1} = \cdots = e_T = Th/T - \tau + 1$ and $\varepsilon_\tau = \varepsilon_{\tau+1} = \cdots = \varepsilon_T = Th/T - \tau$, $V_1 > V_2$ when $\tau > T - T/\sqrt{\delta}$ (approximately), i.e. the project will be started after procrastinated

for $T - {}^{T}/_{\sqrt{\delta}}$ days and will have ${}^{T}/_{\sqrt{\delta}}$ days to finish.

The salience cost of beginning the project relative to the total nonprocrastinating cost is $\frac{\delta h^2}{Th^2} = \frac{\delta}{T}$.

If the project is started on time, the person would have to work for h hours per day. However, it was procrastinated so the person would have to work for $\frac{Th}{{}^{T}/_{\sqrt{\delta}}} = \sqrt{\delta}h$. Total cost of completing the project increases by $\frac{\sqrt{\delta}h - h}{h} = \sqrt{\delta} - 1$.

If T=100 and δ =2, the salience cost of beginning the project is only 0.02. However, after procrastination, the total cost of completing the project increases up to 41%.

Procrastination: Substance Abuse, Savings, and Organization Failures

- Substance abuse: Most drug abusers intend to cut down their intake since they recognize that the long run cost of their addiction exceeds its benefit, but there is salience cost to do so today so they intend to stop -- tomorrow.
- Savings: In the absence of pension plan, many individuals lack sufficient self-discipline to begin saving for retirement
- Organization failures: For example, delay in initiating projects or terminating projects