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Deviant aggressive behavior

From Theory I, we could infer that individual behaviors are learnt from the perceived awards and lost. Therefore, to reduce deviant aggressive behavior, policy makers should increase the perceived and expected cost of conducting deviant behaviors. The expected cost of conducting deviant behaviors actually is equal to *the probability of being caught* times the *cost of being caugh*t. To increase this expected expense, policy makers could at one hand, increase the probability of being caught, for example, allocating more police resources in one region and reporting more deviant behaviors; on the other hand, policy makers could increase the punishment of misbehavior, for example, giving longer sentence or higher economic punishment. Moreover, policy makers could also report more cases of misbehavior of long sentences consequently, which will increase the 'perceived' cost of conducting crime among mass audience.

From Theory II, deviant aggressive behavior is driven by personal emotional states-*angry* and frustrated life experience. Following this theory, to reduce aggressive behavior, policy makers should pay more attention to those individuals who are at disadvantaged situations in the society, for example, unemployed people, teenagers without parents, emerging adults under great pressure and etc., giving them necessary support and assist them cope with the unexpected situations to re-gain confidence towards life. Moreover, policy makers could also invest in public social service, for example, free psychological service, help group, especially for the disadvantaged ones, to guide them release the negative and hostile feelings in a positive way.

Based on Theory III, people who conduct deviant aggressive behaviors are the ones who do not gain benefits and are most hurt from the social rules. To reduce deviant behaviors is to reduce the un-even, or perceived un-even gap between the suffers and the beneficiaries. Policy makers should devote more efforts in modifying the social rules to be more fair generally. In addition, policy makers should also spend efforts in advocating and communicating the rules to the public, especially the previous suffers of the rules, to reduce the biased perception of it and by which might change their behaviors accordingly.

From Theory IV, deviant subculture is the origin of aggressive behaviors. To reduce aggressive behaviors, public officials should interfere with the deviant subcultures. Public officials should first of all effectively identify the subculture groups who are likely to generate improper behaviors, their personal background, inner structures and habits; then if possible, policy makers should try the best to educate and change their behaviors. At the worst, officials should try to dismiss these subculture groups by interfering the public spaces they usually gather, turning the minds of group members to dissolve these groups internally, and preventing new members from joining in. According to theory IV, interfering with their culture, and the formation of these deviant subcultures groups is the key to reduce deviant behaviors.

Waiting until the last minute

a. Individual rational choice about time and efforts might be able to explain why people always accomplish things at the last minute. People depend on the expected gains and lost when making decisions about when to start/submit things. When accomplishing a task with a clear deadline, people will not gain extra benefits by submitting things at an earlier time; hence they are not incentivized to either submit it, or even to initiate the task earlier. Even if they start working earlier, make smooth progress and could finish it at an earlier time, instead of submitting it just then, people actually could gain more by leveraging the extra time to polish and further revise their work. Since there is no obvious gain of submitting work earlier, people tend to start working close to deadline and submit at the last minute.

b. Following this explanation, I develop a model that *the ahead of time submitting a thing before deadline* (e.g. 10mins means submitting 10mins before the deadline), is a function of, or predicted by, *the expected gains* of submitting at an earlier time minus *the lost* of early submission.

c. An alternative model could be that, the *ahead of time submitting a thing before deadline,* depends on *the difficulty of the task* and the *predictability* of accomplishing it (or the possibility to accurately estimate the time it will spend in accomplishing the task). In this model, the propensity of procrastination is decided by the nature of task. When the task is most difficult, compared with easy task, people will spend much more time and efforts working on it and hence are more probably to finish it at a later stage. Predictability of the task might also play an effect that, if the time estimated to accomplish the task is predictable, people is more likely to start the task right before when it needs to be done and submit it on time; compared with task with less certainty of time needed, under which people will be more likely to start working earlier and hence might submit earlier as well.

d. Following the first model, I predict that if there are explicitly stated gains of early submission, people will generally accomplish much earlier than if there is not. For example, if the evaluation of work is rolling based, who submit earlier will receive higher grades, people will prefer to start working earlier to submit at an earlier time. While for each individual, when making decisions about exact when to submit their work, people will balance their expected gains and lost as well—choosing between submitting earlier with a less satisfactory work, or submitting later with a more polished work, but losing the extra gains of earlier submission.

The second prediction: if there is explicit stated punishment of late work, people will start working earlier and submit their work generally earlier, considering the expected cost of late submission. However, in this case instead of much ahead, more people will just submit their work close to the deadline, since there is no extra benefit of early submission.

Regarding the second model, I predict that for four types of tasks: 1) easy task with predictable time to complete, 2) easy task with unpredictable rate to complete, 3) difficult

task with predictable time to complete, 4) difficult task with unpredictable rate to complete—the 1) and 4) tasks will show most prominent 'last minute effect' and have more late submissions, with 4) most prominent, taking the complexity of tasks into account, which will take general longer time to complete.

Also, I predict that if the deadline is adjusted with several days' extension and is announced 1 day before submission, more people will submit earlier regarding with the new extension, if the task is unpredictable or of high complexity. Because under these conditions, people would have spent adequate time working towards it and expect to complete it before the old deadline; while for tasks of less complexity or more predictable rate to complete, people could easily adjust their schedule according to the new extension and give time to the other urgent things (even at the worst case, they might not start working on it yet), and might still submit it at the last minute of the new extension date.

Selecting and fitting a model

1. Flexible VS Inflexible

a. Flexible statistic learning model will perform better, since with large sample, it will better train the model parameters and reduce the bias. Also with the restricted small number of predictors, it is less likely to be over-fitting and has smaller variance.
b. Flexible statistic learning model will perform worse, since it is more likely to over-fit, when a large number of predictors
c. Flexible statistic learning model will perform better, since it is not based on linear relationship assumption and is subject to multiple relationships among predictors
d. Flexible statistic learning model will perform worse, since it is more likely to over-fit when the variance is high that large variability exists among data.

2. Bias VS Invariance

a. Bias is decreasing with flexibility, since more flexible model could flexibly fit multiple complex relationships, instead of those fixed ones, for example, linear relationship, among parameters.
b. Variance is increasing with flexibility, because for model with higher flexibility, the effect of changing data points for training will also be larger.
c. Irreducible error is constant, since it can not be optimized with different models.
d. Training error is decreasing with flexibility, because more flexible models are better in fitting the training data and hence reduce the training error.
e. Test error is non-linearly related with flexibility, because with the increasing of flexibility, training error is decreasing and the model has general better fitting; however, over-fitting phenomenon could also appear when model is over-fit with training data and cannot be transferred to test data, which consequently increases the test error.