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HW1

Deviant aggressive behavior

If Theory I was correct, then deviant aggressive behavior is a result from reinforcement, which entails rewards and punishment. It is reasonable to form social policies targeting on the rewards and punishment for such behavior. Starting with the rewards for conformity, increasing social welfare including tax cuts, cash subsidies, affordable healthcare, and etc. can be set as rewards conditioning on citizens' behaviors. For instance, for people who do not exhibit deviant aggressive social behaviors on a monthly basis, they can receive tax cuts on groceries. And for those who have pro-social behaviors, they can receive $100 cash subsidies every month. On the other hand, the punishment for deviant aggressive behaviors should be harsh. People who conduct deviant aggressive behaviors can face significant fines or even prison time. Law enforcers should be given the power to assignment punishment with evidence.

If Theory II was correct, then deviant aggressive behavior is a transformation from frustration with personal lives to anger toward authority. Social policies should focus on breaking the link between personal grudges and public expression of deviance and aggression. Hence, psychological consultations should be destigmatized made more accessible to the public. More specifically, communities, schools and companies should have some form of therapists accessible to all. Moreover, similar to what mentioned in Theory I, rewards and punishment can also be applied to prevent people from venting out to personal authority figures. Deviant behaviors toward parents, bosses and public officials should be particularly subject to harsh punishment by laws.

As the first two theories provide behavioral explanations to deviant aggressive behavior, Theory III rationalizes it by arguing that people who are hurt by the rules are supposed to fight the authority for better social environment. If this theory was correct, the social policies should aim to enhance social equality. In the U.S. history, a few renowned figures such as Martin Luther King Jr., Rosa Parks, Malcom X all have expressed their discontent with behaviors deemed deviant according to the social environment then. Their behaviors resulted in several Civil Rights Acts that promote racial equality. Therefore, social policies according to this theory should focus on reduce the inequalities presented now. For instance, there should be better allocation of medical and educational resources for the low-income communities. Law makers can also consider universal base income to improve the living standard for the low-income families.

Theory IV suggests that people are fulfilling the "social responsibilities" of their roles in some subculture by conducting deviant aggressive behaviors. For example, in addition to the positivity generated by it, the hip-hop culture also promotes defiance to authorities, gun violence and drugs. Social policies should be very careful when trying to reduce deviant aggressive behaviors originated from subcultures, as it might look like oppression from mainstream cultures. What social policies can do is to first distinguish the nature of the subcultures. If the

subcultures cause considerable harm to the public or a targeted group, then policies should push for strict laws to prevent individual or collective harmful behaviors. For instance, the white supremacists based their actions on racism, so laws should harshly punish such behaviors. On the other hand, hip-hop culture started as a way to resist oppression, so policies should make sure the subculture is on a lawful track by controlling illegal guns and drugs.

Waiting until the last minute

a. The observations that people often do things at the last minute might be due to planning fallacy and overconfidence. When people think they can finish tasks within a period of time that is shorter than the tasks actually take, it might seem that they have waited until the last minute to start. The main reason for this phenomenon to be observed is that people have too much confidence in being able to finish the tasks at a normal pace but often cannot, so it seems that they start last minute and rush through the tasks.
b. A generalized model can be that people use their perceived expected time for the tasks to determine when to start working. The more confident they are in finishing the tasks effectively, the later they will start working. The outcome of interest in this model is the starting time, whereas the explanatory feature is the perceived expected task completion task (or confidence level).
c. An alternative model can be that the consequence of not finishing the tasks become more perceivable as the deadline approaches, and once the perceived seriousness of the consequence passes a certain threshold, people start working. The outcome of interest in this model is the starting time, and the explanatory features are the seriousness of the consequence of not completing the tasks and time remaining to finish the tasks.
d. For the first model, one prediction could be that people who think the tasks are difficult (more time-consuming) will start earlier than those who think the tasks are relatively easy, given the same tasks and same time to finish. Another prediction could be that if there are two identical tasks being assigned and one group of people is told that the estimated task completion time is 10 hours, whereas the other group is told 5 hours, then the first group will start earlier than the second group.

   For the second model, an interesting prediction could be that if two identical tasks are assigned to two groups of students and the first group is told that late submissions will result in a 5% deduction in the task grade, while the second group is told that late submissions will result in an F in the class, then the second group will start earlier than the first group. Another perdiction could be that two identical tasks with same consequences are assigned to two groups of people and the first group is given 10 days to finish, while the second group is given only 3 days, then the second group will start relatively earlier than the first group.

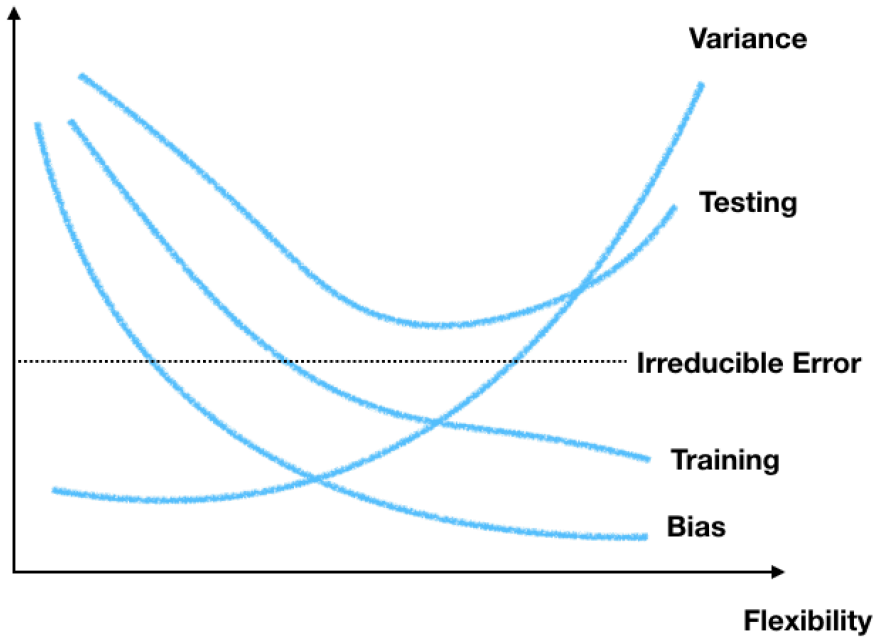
Selecting and fitting a model

1.

a. Flexible models generally perform better than inflexible models in prediction when n is extremely large and p is small, because the large sample size reduces the likelihood of overfitting for flexible models. Flexible models can significantly reduce bias when not generating much more variance in this case.
b. Inflexible models perform better than flexible models when n is small and p is large, as inflexible models tend to overfit with small n and large p, making it lack predictive power.
c. When the relationship is highly non-linear, flexible models generally perform better, because they allow possibilities of more types of relationships than inflexible models. Inflexible models tend to generate more bias in this case.
d. When the variance of error term is extremely high, inflexible models should perform better, as flexible models are more likely to overfit with much noise.

2.

Bias: from inflexible models to flexible models, bias should decrease monotonically, as more flexible models can fit more sample data, though might be overfitting.
Variance: variance should increase monotonically with more flexibility in models, as there is a tradeoff between bias and variance.
Training error: training error should decrease monotonically as flexibility increases, as more flexible models can fit the training sample better.
Test error: test error should decrease as the model moves from inflexible to optimally flexible, and increase after the optimal point, because if the model is too flexible, it will overfit.
Irreducible error: irreducible error should stay constant, as it is independent of the models.


Variance
Testing
Irreducible Error
Training
Bias
Flexibility