Assignment 1
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1 Building models

Deviant aggressive behavior

Theory I:

If Theory I which based on a behavioristic perspective were correct, that deviant aggressive behavior is derived from a learning process, the appropriate social policy would be setting punishment. According to the behavioristic theory on learning, punishment can be categorized into positive punishment negative punishment. The former works by presenting the aversive consequences of an undesired behavior so as to lower the frequency of the behavior in the future, while the latter works by removing pleasant and reinforcing stimuli on the presence of an undesired behavior. Punishment for deviant aggressive behavior can be systematically constructed through rules and laws, including penalty, confinement (positive punishment) and deprivation of qualification for honors/rewards (negative punishment). Besides, according to the Social Learning theory, people could also gain experience through the consequence of others' behavior (Bandura, 1978). Hence presenting consequences through media would also help reducing aggressive behavior.

Theory II:

Theory II claims that deviant aggressive behavior is caused by frustration in one's personal life. Thus, better ways to manage and let out one's negative emotions would be necessary in reducing such behavior. Thus, social policy on offering more counselling services, emotion management workshops and sports games would be helpful methods for managing and/or letting out frustration.

Therapy for frustration, among the aforementioned, would bring long-lasting benefits. A psychotherapist may delve into the underlying causes of one's rage and deal with that accordingly, and offers not only reconstruction of the current emotion and/or situation, but would help building emotion regulation skills and cognitive restructuring skills (Holloway, 2003). Emotion regulation includes relaxation techniques and emotional balance which helps one maintain control in the face of unpleasant situations. Cognitive restructuring, on the other hand, focuses more on recognizing one's distorted thoughts and replacing them with more positive and productive ones.

Theory III:

Theory III argues that deviant aggressive behavior is limited to a certain social hierarchy who are the victim of unfair social rules and suffering from systematic discrimination. Based on this theory, aggressive behavior suggests oppression and a sense of helplessness (i.e., an inability to rectify current unpleasant situation). The situation could be hard to mitigate through mere reconstructing social policy since if the current social rules contains systematic discrimination, the rule makers must be vested interests of such discrimination. The best possible social policy is to increase the involvement of these victims of social rules in the rule-making procedure. For instance, a portion of congress seats can be reserved for the group with low income, with disabilities (i.e., the groups that are normally oppressed by the current social system) so as to guarantee their interests' being taken into consideration.

Theory IV:

Theory IV is in line with the Subcultural Theory raised by Cohen (2003). According to Cohen (2003), subcultures are defined as subsystems or anti-systems of society with their own attitudes and norms that often contradict the moral concepts of majority society. Deviant aggressive behavior is social behavior derived from interaction with deviant subcultural groups that have values and attitudes which are conductive to crime and violence. This line of research focused mainly on juvenile delinquency and strived to understand and control such cultural pattern so as to break the transition from teenage offender into habitual criminal. Deviant aggressive behavior of this kind is argued to be motivated by social class rational for deviance, since the union of juveniles and the formation of the subcultures is the result of their failed adjustment and status problems caused by the unequal society. Young people express social differentiation caused by unequally distributed social structural conditions. Thus, appropriate social policy should focus on mitigating such social inequality and help juvenile with their status issues through better social welfare, better education for young people with lower socioeconomic status and higher social mobility.

Reference

Bandura, A. (1978). Social learning theory of aggression. *Journal of communication*, *28*(3), 12-29.

Cohen, A. K. (2003). A general theory of subcultures. *Culture: Critical Concepts in Sociology*, *3*, 259-69.

Holloway, J. D. (2003). Advances in anger management. *Monitor*, *34*, 54.

Waiting until the last minute

a.

This observation might be true for the following reasons.

Firstly, lack of ability to delay gratification, that is, to resist the temptation of instant rewards so as to gain rewards in the long run. Most of the tasks people do at the last minute can be tough, boring and/or exhausting. When compared with relaxing activities such as watching YouTube videos or browsing Instagram photos, these tasks are way less tempting and pleasant. Consequently, we often spend time on things other than the tasks.

Secondly, people who aim for perfection may start working on tasks late since they strive to get everything in its perfect condition before they actually start working. For instance, one may procrastinate on learning Python when he/she wants to find the best book or online courses for Python, and get stressed by the fear of failure (e.g. cannot learn everything perfectly and effectively).

b.

I. Fear of failure model:

One's subjective estimation of task difficulty and his/her own ability → subjective estimation of probability of failure → level of procrastination

c.

II. Rebellion against authority model:

Task that people often do at the last minute are often assigned by an authority and come with time

limit → being commanded to may give rise to a sense of losing control, which is uneasy → resisting on working on the task

d.

Predictions based on model I:
- Perfectionists are more likely to procrastinate since their aiming for perfection would raise the difficulty of the task and thus the probability of failing it.
- To break an ambitious project down into small workable steps would help mitigate procrastination since the difficulty of each step is less than that of the whole task

Predictions based on model II:
- People with high need for power have higher tendency to work at the last minute. According to the Three Needs Theory (McClelland, 1976), the need for power refers to one's will to not be controlled by others, and to impact others. This people would go through more resistance when being assigned to tasks.
- People with military experience are less likely to do things at the last minute since they are more used to follow instructions given by authorities.

Reference

McClelland, D. C., Atkinson, J. W., Clark, R. A., & Lowell, E. L. (1976). The achievement motive.

2 Selecting and fitting a model

1 Flexibility

a.

Better. Given a small number of predictors and larger variance brought by the large sample size, a flexible method would fit the data closer and hence have better performance.

b.

Worse. With small number of observations, the model is easy to overfit, thus the flexible method would have worse performance.
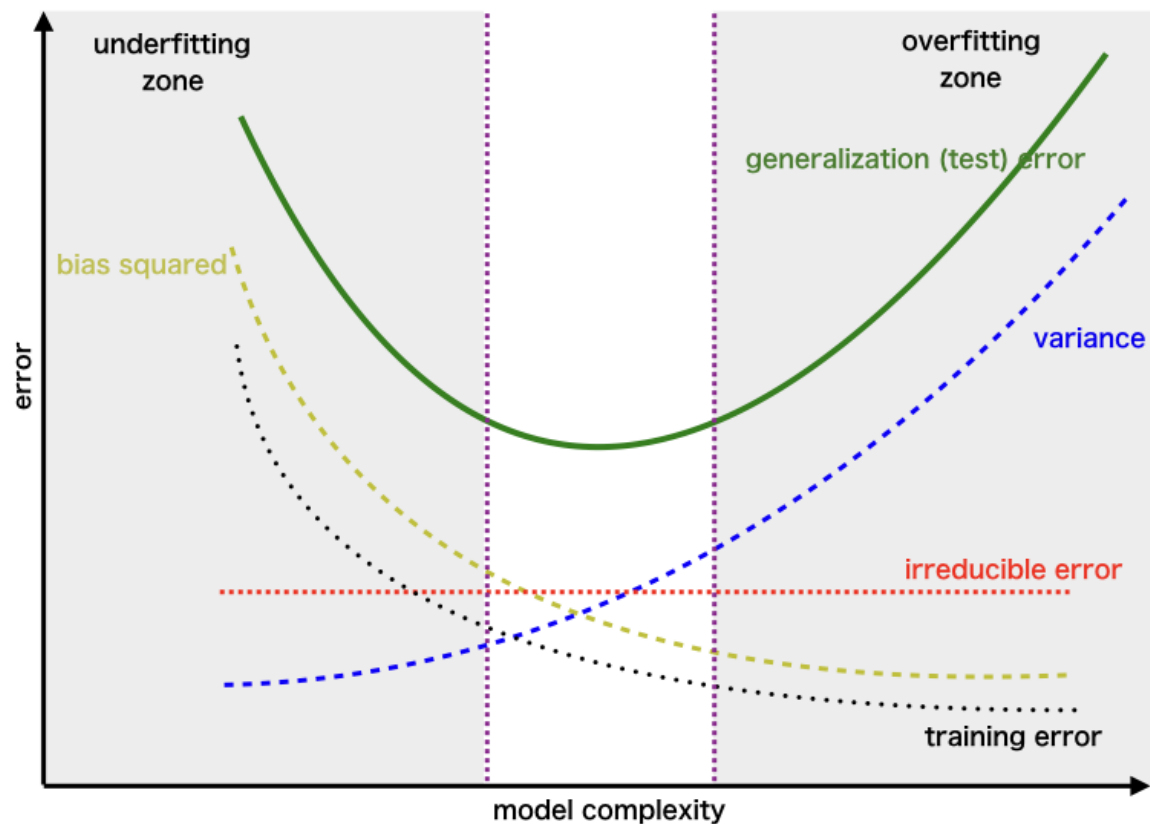
c.

Better. With such non-linear relationship, a flexible model can fit the data closer, has lower risk of underfitting and lower bias.

d.

Worse. A flexible model fit the data closer and is hence being more vulnerable to the variance in the error terms (noise). This could lead to overfitting and worse performance.

2 Bias-variance trade-off

(https://miro.medium.com/max/1506/1*oO0KYF7Z84nePqfsJ9E0WQ.png by Giorgos Papachristoudis)

Bias: Bias$(X)=E[f^{\hat{}}(X)]-f(X)$ decreases with increasing flexibility monotonously. Bias refers to the discrepancy between the prediction of the expectation model outcome and the real outcome, and the more flexible the model is, the better it could fit the data and have better prediction.

Variance refers to the variability of outcomes provided by models with different training sets. Higher flexibility of the model leads to higher risk of overfitting to the training set, and thus the outcome of models with different training sets would be more varied.

Training error: model with higher flexibility could fit the data in the training set closer and thus has lower training error.

Test error is a U-shape curve since it is composed of bias and variance, and only with a moderate flexibility when both bias and variance are low, can test error reaches its minimum value.

The error (discrepancy between model outcome and the true value) is comprised of reducible value brought by the model and irreducible error such as the variance of the error term. Thus, the irreducible error has no relation with the flexibility of model and appears as a constant in the graph.