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Deviant aggressive behavior

Based on four theories provided, we can generate predictions of effective policies that can be used to reduce deviant aggressive behaviors in society.

Theory I addresses deviant aggressive behavior is learned from experience, and it is built on positive reinforcement and positive punishment methods of B. F. Skinner's operant conditioning model. Thus, the best way to reduce deviant aggressive behavior is to introduce a desirable stimulus to encourage the continuity of certain behaviors and an undesirable stimulus to discourage deviant behaviors. Laws, regulations, rules address the undesired deviant behaviors. If anyone in society violates laws or rules, he should receive any form of punishment, including sentencing, fines, and deprivation of rights, which acts as a way of positive punishment to reduce such deviant behaviors. At the same time, if people follow laws and social rules, they should receive rewards, including monetary rewards and commendations.

Theory II emphasizes the deviant aggressive behaviors of someone as an expression of anger towards personal authority figures when he is frustrated in his personal life. Based on such an explanation, there are two ways to reduce deviant behaviors: first, break the connection between personal frustration and hostility towards authority figures; second, break the connection between expressive of hostility and deviant aggressive behaviors. Since the second theory is built on the connection between personal frustration and deviant behaviors, the best way I found is through mental adjustment and support. Specific policies may include free

psychotherapy for people who are going through frustrations in life to reduce frustration and express anger differently, more means of open communication with authority figures, and providing classes, activities in company, community, and at home to release stress and anger correctly without expressing with deviant behavior.

Theory III reasons deviant aggressive behaviors result from discriminations in social rules towards the oppressed group. Therefore, the best way to reduce deviant behaviors is to reduce systematical discriminations in current social rules to make everyone benefit and hurt equally. Specifically, when making social rules or laws, those under-representative groups should be included in the process, and they should be encouraged to make changes in the current system, rather than exercising deviant behaviors. Besides, if a group of people has a high tendency to conduct deviant aggressive behaviors, policymakers should consider if current policies discriminate against that group. However, due to the complexity of social justice, it is challenging to eliminate discrimination and keep everyone profit equally. During the policymaking process, each competing interest group tries to influence governmental policy in favor of their interests. Those groups with more funds or power gain more access to decision-makers. Thus, rules and laws should prevent money and power from influencing the policymaking process and encourage under-represented groups to participate in the process.

Theory IV concludes that people who conduct deviant aggressive behaviors belong to a deviant subculture, which is a social role. To reduce deviant behaviors, we can make social policies to prevent the formation of aggressive deviant subculture and to prevent people from contacting such a subculture. Specifically, web browsers can filter out contents that relate to the formation of deviant subculture or encourage aggressive behaviors. Social media should also

regulate information that includes the promotion of deviant aggressive behaviors. In those subculture communities, values, and activities that encourage aggressive behaviors should also be prohibited. On the other hand, policymakers can focus on the incorporation of such subculture into the mainstream culture and reduce the aggressive component in the deviant subculture. For example, social media can make such a subculture's voice and values heard without the aggressive behaviors involved but promote the expression of those values through art (songs, paintings, etc) and non-violent behaviors (protest and parade).

Waiting until the last minute

People often do things at the last minute, which is often described as procrastination. Not only do I know people who like to wait until the last minute to start working, but also I myself often procrastinate. Interestingly, there are about 5000 answers under the topic "how to get rid of procrastination" on Quora and many researchers have studied the psychological reasons behind such a common behavior. Many people regard procrastination as a bad habit, which brings anxiety and pressure to their personal life, but they still keep doing things at the last minute. Based on my personal experience, the reason behind procrastination is people think they perform the best under such pressure. According to Parkinson's law, "work expands so as to fill the time available for its completion." In other words, if you start a paper three days earlier before the deadline and the paper actually takes 3 hours to complete, you will work on the paper the whole three days to complete it, rather than 3 hours before the deadline. The efficiency before the deadline makes people wait until the last minute to finish it.

Based on the above explanation, it assumes the quality of the completion of tasks (Q) when the performer starts early or right before the deadline does not change. Thus, the general model procrastination includes the efficiency of performing the task (E), the time to the deadline (T), and the pressure or other psychological effects when the time approaches the deadline (P). The simple model is $Q = E/(TP)$. This model can explain the observation that as the time to the deadline (T) decreases, to maintain the same quality of work, the pressure (P) will increase, but since P may increase more rapidly as a result of reduction of T, the performer will increase efficiency to obtain the same quality of work, and thus E will increase.

On the other hand, some people believe procrastination is a personal trait that only shows within certain groups. According to Ruurdje Procee, "research shows that people are more likely to procrastinate when they are sensation seeking, when they have low self-esteem, when they score low on conscientiousness, and when they are impulsive (748, Procee)." Many personality factors contribute to one's procrastination. At the same time, the reason behind procrastination can be task-related. When the task is considered difficult and energy-consuming, or boring and frustrating, the performer is more likely to delay the execution of such a task. Thus an alternative model of procrastination can be a linear regression model of the delay time (D) with personality traits of procrastination (P) and the evaluation of tasks (T), that $D = \beta_0 + \beta_1 P + \beta_2 T + \varepsilon$.

Based on the model, $Q = E/(TP)$, the quality of the task completed was assumed to be constant when building the model, because I assume the quality of the completed task does not affect people to procrastinate or not. However, in reality, the quality cannot stay unchanged if the performer is delaying the task and the efficiency of the performer cannot grow without bound. Thus, the first prediction is that when approaching the deadline, one's pressure increases, and the

efficiency of completing the task has reached a maximum point, the quality of the completed task will decrease as a result. Secondly, because one's response to approaching the deadline is different from others, his sensitivity to the time of delay is different and the changes in pressure and other psychological activities are not certain. The second prediction is that if someone is less sensitive to approaching the deadline, his pressure level will not increase as a result and his efficiency may not also be affected. Thus, the quality of his completed task will decrease.

Based on the model, $D = \beta_0 + \beta_1 P + \beta_2 T + \varepsilon$, the first prediction is that if the person demonstrates more traits that are related to procrastination, then the longer time he will delay starting the task. For example, if the performer is impulsive and sensation-seeking, he is more likely to wait until the last minute to start his task. The second prediction is that if the task is itself more aversive, the performer will delay a longer time. For example, if the task does not bring any self-achievement and is very hard and cumbersome, the performer will be less willing to start early on this task. However, this model is based on the assumption that P and T are independent factors, but it may not be the case in reality. Specifically, if the task is too hard and the person is afraid of failure, the two factors interact and reinforce each other, which leads to the delay of action. In such a case, the model needs to be modified.

Selecting and fitting a model

When the sample size n is extremely large and the number of predictors p is small, the flexible statistical learning method will perform better than the inflexible method, because the main concern with applying the flexible method is overfitting when the sample size is small, but in this case, large sample size can prevent overfitting and flexible method can reduce bias.

When p is extremely large and n is small, the flexible learning model will perform worse than the inflexible method. As mentioned above, the small sample size will lead to overfitting.

When the relationship between the predictors and responses is highly non-linear, the flexible method will perform better than the inflexible ones. Since we have known predictors and responses have a non-linear relationship, the inflexible method can forcibly fit linearity in the data, and thus, a flexible method should be applied in this case.

When the variance of the error terms $\sigma 2 = \text{Var}()$ is extremely high, the flexible statistical learning method will perform worse than the inflexible method. When variance is extremely high, applying a flexible method leads to a reduction in bias but an increase in variance. If a flexible method is used, it will capture many variances and fit the error in the data.

The graph I analyzed is from the medium blog post, which including bias, variance, training error, test error, and irreducible error curves. As it moves from less flexible statistical learning methods towards more flexible approaches, the irreducible error is a parallel line because it remains unchanged and does not affect by which method is applied to the model. When we apply a more flexible method, it means the model we generated fit will the training data more closely, and thus the training error will decrease gradually. As we learned, the generalization test error is described as the test mean squared error, which is equal to the sum of variance, squared bias, and irreducible error. Bias is the difference between averaged prediction and true observation of the value we try to predict. Thus, as the flexibility of the model increases, the model fits with the data more closely and bias will decrease. On the other hand, variance refers to the amount of change in model prediction if we apply a different of the training dataset. Thus, the more flexible the model is, the more closely it fits the data, the more variances it leads

to. In general, more flexibility will lead to an increase in variance and a decrease in bias. The test error as a sum of the two, and therefore, it initially declines as the squared bias decreases and at one point, it levels off and starts to increase as the variances increase.

Reference

Procee, R., Kamphorst, B. A., van Wissen, A., & Meyer, J. J. (2014). An agent-based model of procrastination. In *ECAI 2014 - 21st European Conference on Artificial Intelligence, Including Prestigious Applications of Intelligent Systems, PAIS 2014, Proceedings* (Vol. 263, pp. 747-752).