**Delay Discounting**

PSY310: Lab in Psychology

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**GitHub link:**

**Introduction**

The delay discounting task is commonly used to measure impulsivity among persons The delay discounting task is commonly used to measure a person's level of impulsivity. It explores the decision-making regarding opting for the choice between a smaller but sooner reward and a larger reward available later, where preference for the smaller reward is associated with an increased level of impulsiveness.

This task provides a quantitative index to the degree of discounting by calculating a parameter often referred to by the symbol 'kk', which quantifies the extent to which an individual devalues future rewards. From the above considerations, it can be observed that participants with higher kk constants are more easily enticed by the early reward and have less temporal perspective compared with participants with lower kk constants, who are more patient and have better self-regulation. For instance, it has been found that, particularly, substance users, which are characterized by impulsive behaviors, have higher steeper rates of discounting ( Odum, 2011). On the other hand, a lower kk value is found in self-controlled individuals or those with high long-term goals/ long-term consistent behaviors. These results stress the use of the delay discounting task in the study of variation of decision-making patterns in different populations.

**Method**

This study involved four participants who were undergraduate students at Ahmedabad University who completed a delay discounting task to measure their impulsivity. Each participant completed 98 trials, where they made a series of hypothetical choices between smaller immediate rewards and larger delayed rewards. The delayed rewards varied systematically in size and delay duration, allowing researchers to estimate each participant's discounting parameter (kk). The task was built and performed on PsychoPy software.  After recording the data, the parameter k was calculated.

**Results**

The estimated discounting values (kk) for each participant are as follows:

* Participant 1: k=0.015734957k = 0.015734957
* Participant 2: k=0.00253386k = 0.00253386
* Participant 3: k=0.00253386k = 0.00253386
* Participant 4: k=0.015734957k = 0.015734957

The findings reveal moderate variation and differences in discounting behavior between participants. While participants 1 and 4 scored higher in the kk variable and can be characterized as more impulsive, participants 2 and 3 have a lower kk score and can be described as more patient.

**Discussion**

In the delay discounting task, the final delay discounting value (kk) has emerged as an important indicator of individual-level impulsivity. It, therefore, has the greatest utility regarding systematic comparisons of people or status on the dimension of impulsivity because it provides a quantitative index with an infinite range of potential values. One sample is related to the brain function measurement: kk bigger less people characterized as rather impulsive and unable to wait, thus the best way to describe such behavior as addictions or spending sprees.

However, though undeniably kk is a reliable indicator of impulsivity, it is probable that it does not have a complete account of the variations. Owing to the fact that impulsivity is a complex construct reflecting various aspects of cognition, emotion, and context, it is contaminated by various pre-impulsive and post-impulsive processes. Therefore, kk should be used in combination with other indices to make further perception of impulsivity possible.

Moreover, the nature and presentation of the delay discounting task can also affect the outcomes. For instance, hypothetical versus real rewards, the magnitude of the rewards etc. can also influence the participants' discounting. Future studies must extend these findings to decipher the implications of the factors that moderate the relation between individual characteristics and kk.

In conclusion, the discounting value (kk) is a powerful marker for understanding impulsivity. However, to get a broader understanding of individual differences, it should be integrated with other behavioral and psychological measures.

**References**

Odum, A. L. (2011). Delay discounting: I'm a k, you're a k. *Journal of the Experimental Analysis of Behavior, 96*(3), 427–439. <https://doi.org/10.1901/jeab.2011.96-423>