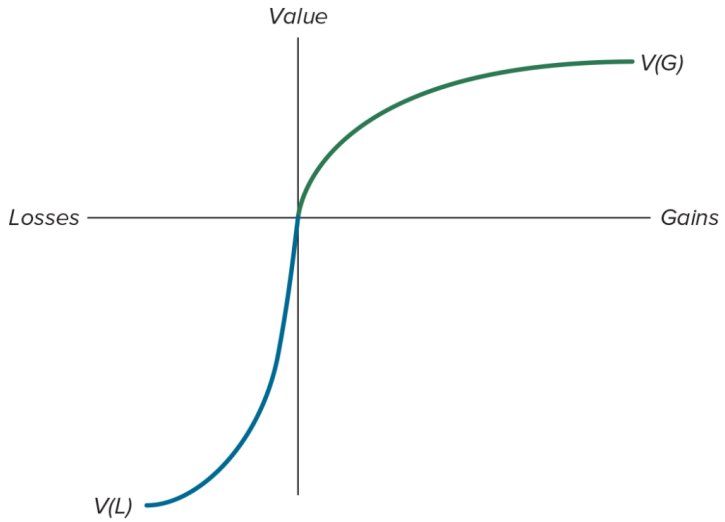
Problem Set 4

Name:(last)__Jackson_____(first)___Grant_____

Suppose your happiness is given by a Kahneman-Tversky value function like the one shown in the diagram.



You have decided to put the most favorable spin on the various combinations of events that occur in your life. For each of the following pairs of events, will you be happier if you consider their effects separately or if you first combine them and consider only their net effect?

a. A gain of $500 and a loss of $50
b. A gain of $50 and a loss of $500
c. A gain of $500 and a gain of $600
d. A loss of $500 and a loss of $600

a. The net gain of $450 would produce a positive effect, but smaller than the separate gain of $500. You would be happier considering them as separate.

b. The net loss of $450 would produce a negative effect, but not as big as the separate loss of $500. You would be happier combining them.

c. With a net gain larger than both the separate positive gains, you would be happier considering them as separate gains due to the diminishing sensitivity to gains.

d. With a net loss more than both the separate negative losses, you would be happier combining them due to diminishing sensitivity to losses.

Your roommate is having a dreadful time deciding between a biology and an art history course. You think she would be better off if she took the biology course, but you do not want to make her choice for her. Instead, you make a suggestion that does not appear to indicate your wishes in the matter, but she immediately picks the biology course after you offer your suggestion. What might that suggestion have been?

You could have made a suggestion like, "Why don't you flip a coin? Heads for biology, tails for art history". This comes off as neutral but takes advantage of the tendency for people to view the outcome they prefer associated with "Heads", so your roommate may be more likely to choose biology.

Suppose you have $100 to invest or store in a safe deposit box. Your only alternative to storing is a stock which sells for $100. The stock is an initial public offering for a company with a risky idea that is projected to double in value in a year if the idea works. The history of such ventures is that 50% of the time they fail and you lose your money. The other half of the time they double your money in a year.

a. What is the expected value of each option at the end of the year?
b. Which option would you take if your utility function for money is $u(M) = M^2$?
c. Which option would you take if your utility function for money is $u(M) = M^{1/2}$?

a) EV:

Safe deposit: $100

Stock: $0.5(0.5) + 200(0.5) = \$100$

b) $u(M) = M^2$

Safe deposit: $u(100) = 100^2 = 10{,}000$

Stock: $u(10) \times 0.5 + u(200) \times 0.5 = 200^2(0.5) = 20{,}000$

Choose stock option.

c) $u(M) = M^{1/2}$

Safe deposit: $u(100) = 100^{1/2} = \sqrt{100} = 10$

Stock: $u(0)(0.5) + u(200)(0.5) = 200^{1/2}(0.5) = \sqrt{200} \times 0.5 = 7.07$

Choose the safe deposit option.

Amanda has a utility function given by $U = \sqrt{M}$, where M is her income. If she becomes an economics professor, she will make M=81/yr with probability 1. If she becomes an attorney, she will make M=900/yr if she becomes a partner in a Wall Street firm, but only M=25/yr if she fails to make partner. The probability of her becoming a partner is 0.2. Ellis is an infallible judge of legal talent. After a brief interview, he can state with certainty whether Amanda will become a partner. What is the most Amanda would be willing to pay for this information? (Set up the relevant equation. You don't need to solve it.)

Without information: EU(no info) = sqrt(900)*(0.2) + sqrt(25)(0.8)

With information: EU(info) = sqrt(900-x)*(0.2) + sqrt(81)*(0.8)
- x = amount she would pay for information

Equation to solve: EU(no info) = EU(info)
sqrt(900)*(0.2) + sqrt(25)*(0.8) = sqrt(900-x)*(0.2) + sqrt(81)*(0.8)

Give some examples in which people do not self-insure against minor losses. And explain in your own words, why it makes sense to self-insure against minor losses.

Examples of not self-insuring against minor losses could include people purchasing extended warranties on small electronics, buying travel insurance for inexpensive trips, or insuring low value items in home insurance policies. It would make sense to self-insure for reasons like the cost of insurance often is more than the expected value of the loss, same concept for warranties. This would also allow insurance companies to focus more providing coverage for more significant risks.