

STAT 230 PROJECT IDEAS

From *Thinking, Fast and Slow* by Daniel Kahneman
(page numbers included)

- Stroop Task Experiment (p.25)
 - Usually done with color, can be done with words and directions
 - Example: Read a printed word while ignoring the color of ink it is in. Read **Yellow** **Blue** rather than the color of the ink “red, green”. Compare with **Red** **Blue** scores, words that match the color ink they were printed in.
 - Book example uses the words upper and lowercase printed in either UPPER or lowercase. Participant has to call out what is the actual printed word is. Second column, the words match. Then compare the response times of the two options.
- Add-1 Task (p.31)
 - Write a string of four digits on an index card (several index cards), place a blank card on top of the deck. Start beating a steady rhythm (use metronome), read the first four digits aloud, wait two beats, then report a string in which each of the original digits is incremented by 1 (5294->6305). Important-keep the rhythm.
 - Experiment ideas- change the number of digits used (three numbers, four numbers, five numbers) or change the number the digits are incremented by (add-2, add-3) test ability to successfully report incremented numbers. Within subjects design-start the participant easy with three numbers, increase difficulty to four, five, or even six.
- Bat and Ball Question (p.44)
 - A bat and ball cost \$1.10
The bat costs one dollar more than the ball.
How much does the ball cost?
 - The correct answer is 5 cents. The intuitive answer says that the ball costs 10 cents.
 - At a selective university more than 50% of students gave the intuitive answer. At less selective universities, the rate of the incorrect answer was greater than 80%
 - Test a group of participants and see who comes up with the intuitive, incorrect answer of 10 cents, and who takes the time to think through the answer and arrive at the correct conclusion of 5 cents
- Priming task (p. 52)
 - Have participants read a list of like words (words about eating) then have them complete a word completion task (SO_P). If they have been primed to eating words, they will most likely fill the word as SOUP, if they have been primed with washing words they will most likely fill the word with SOAP.
- Smile and Frown experiment (p. 54)
 - Hold a pencil between your teeth for a few seconds with the eraser pointing to your right and the point to your left. Now hold the pencil so the point is aimed straight in front of you, by pursing your lips around the eraser end.
 - One of these actions made you smile and the other made you frown.

- Have participants hold the pencil in either the “frown” or the “smile” and rate either jokes or comics as funny. Those who smiled will rate them funnier than those who frowned.
- Cognitive Strain (p. 65)
 - Participants were asked questions with intuitive answers. Half of the participants saw the questions in a small font in washed-out gray print (which induced cognitive strain) the other half saw it in normal font. The normal font participants made at least one mistake in the test, but the proportion dropped to 35% when the font was barely legible. Those with illegible font did better because it required more focus.
 - If it takes 5 machines 5 minutes to make 5 widgets, how long would it take 100 machines to make 100 widgets? 100 minutes OR **5 minutes**
 - In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half of the lake? 24 day OR **47 days**
- Halo Effect (pg. 82)
 - Halo Effect- the tendency to like (or dislike) everything about a person—including things you have not observed—based on limited knowledge about that person.
 - Consider these two people:
 Alan: intelligent— industrious— impulsive— critical— stubborn—envious
 Ben: envious— stubborn— critical— impulsive— industrious—intelligent
 - The sequence which you learn about these two determines how you feel about them. Change the sequence, change how you feel.
- Cause and Chance task (p. 115)
 - People tend to attribute cause to chance events.
 - For example, take the sex of six babies born in sequence at a hospital. The sequence of boys and girls is obviously random; the events are independent of each other, and the number of boys and girls who were born in the hospital in the last few hours has no effect whatsoever on the sex of the next baby. Now consider three possible sequences:
 BBBGGG
 GGGGGG
 BGBBGB
 - Are the sequences equally likely? Yes, intuitive answer says no. Which one do people think is most likely? BGBBGB, it is most random looking one.
- Fluent Retrieval Task (p. 132)
 - The ease at which you can retrieve instances of a specific behavior determines how you think about that behavior.
 - Task: Ask the participant to list twelve instances of assertive behavior.
 - This is affected by the number of instances retrieved and the ease with which they come to mind.
 - The contest yielded a clear-cut winner: people who had just listed twelve instances rated themselves as less assertive than people who had listed only six. Furthermore,

participants who had been asked to list twelve cases in which they had not behaved assertively ended up thinking of themselves as quite assertive! If you cannot easily come up with instances of meek behavior, you are likely to conclude that you are not meek at all. Self-ratings were dominated by the ease with which examples had come to mind. The experience of fluent retrieval of instances trumped the number retrieved.

- Probability vs. Representativeness (p. 159-160)

- Which one is more likely to happen?

A massive flood somewhere in North America next year, in which more than 1,000 people drown.

An earthquake in California sometime next year, causing a flood in which more than 1,000 people drown

- People are more likely to choose the plausible explanation rather than the probable explanation.

- Broken Dishes (p. 160-161)

- Participants were asked to ascribe a value to two sets of dishes. In one instance, they were asked the price of both sets at the same time, in another the dishes were presented separately.

	Set A: 40 pieces	Set B: 24 pieces
Dinner plates	8, all in good condition	8, all in good condition
Soup/ salad bowls	8, all in good condition	8, all in good condition
Dessert plates	8, all in good condition	8, all in good condition
Cups	8, 2 of them broken	
Saucers	8, 7 of them broken	

- When participants were asked to assign value to the dishes together, they gave more value to Set A. When they valued the dishes separately, Set B was given a higher value.

- Hindsight Bias (p. 202)

- Choosing a topic on which minds are not completely made up— say, the death penalty— the experimenter carefully measures people's attitudes. Next, the participants see or hear a persuasive pro or con message. Then the experimenter measures people's attitudes again; they usually are closer to the persuasive message they were exposed to. Finally, the participants report the opinion they held beforehand. This task turns out to be surprisingly difficult. Asked to reconstruct their former beliefs, people retrieve their current ones instead— an instance of substitution— and many cannot believe that they ever felt differently.

- Bernoulli's Theory Task (p. 275-276)

Anthony's current wealth is 1 million.

Betty's current wealth is 4 million.

They are both offered a choice between a gamble and a sure thing.

The gamble: equal chances to end up owning 1 million or 4 million

OR

The sure thing: own 2 million for sure

- Which option do you think Betty will choose and which option do you think Anthony will choose?
- Anthony is more likely to choose the sure thing because no matter what he is doubling his wealth. Betty is more likely to take her chances, as others do when faced with very bad options, she can either lose half her wealth for sure or take the gamble with equal chances to lose $\frac{3}{4}$'s of her wealth or lose nothing.
- Risk Aversion (p. 279-280)
 - Problem 1: Which do you choose? Get \$ 900 for sure OR 90% chance to get \$ 1,000
 - Problem 2: Which do you choose? Lose \$ 900 for sure OR 90% chance to lose \$ 1,000
 - Most people are risk averse in problem one, they will choose to get \$900 for sure. In problem 2 most people will chose to gamble.
 - Experiment idea: Does this change for different amounts of money?
- Pop out effect (p. 301)
 - The human brain is wired to perceive certain things faster. For example, some experimenters have reported that an angry face “pops out” of a crowd of happy faces, but a single happy face does not stand out in an angry crowd. Also, when asked to find a circle in a row of squares, participants can find the circle easily. However if asked to find a circle in a row of octagons, the participant finds it more difficult.
 - Experiment idea: Test participants on their ability to find specific objects among a grouping of other objects. Are some objects easier to find then others? How long does it take to find them?
- Emotion effect (p. 301)
 - “Threat” emotions on faces are easier to pick out than happy emotions on faces. For example, participants will more easily identify an angry face in a group of faces than a happy face in a group of faces.
 - Experiment idea: Test participants on their ability to pick out threat emotions and non-threat emotions.
- Emotion Words (p. 301)
 - The brain responds more quickly to emotionally loaded words (i.e. war, crime, gun) rather than happy or neutral words (i.e. peace, love, tree, rock).
 - Experiment idea: Test participants on reaction times and ability to remember emotionally loaded words vs. neutral or happy words.
- Economic Modeling (p. 306)
 - We also found that the moral rules by which the public evaluates what firms may or may not do draw a crucial distinction between losses and gains. The basic principle is that the existing wage, price, or rent sets a reference point, which has the nature of an entitlement that must not be infringed. It is considered unfair for the firm to impose losses on its customers or workers relative to the reference transaction, unless it must do so to protect its own entitlement.

Consider this example: A hardware store has been selling snow shovels for \$ 15. The morning after a large snowstorm, the store raises the price to \$ 20. Please rate this action as: Completely Fair, Acceptable, Unfair, Very Unfair

- Are participants more likely to rate this as fair or not fair?
- Asian Disease Problem (p. 368)
 - Imagine that the United States is preparing for the outbreak of an unusual Asian disease, which is expected to kill 600 people. Two alternative programs to combat the disease have been proposed. Assume that the exact scientific estimates of the consequences of the programs are as follows:

Question Set 1

If program A is adopted, 200 people will be saved.

If program B is adopted, there is a one-third probability that 600 people will be saved and a two-thirds probability that no people will be saved.

Question Set 2

If program A' is adopted, 400 people will die.

If program B' is adopted, there is a one-third probability that nobody will die and a two-thirds probability that 600 people will die.
 - Look closely and compare the two versions: the consequences of programs A and A' are identical; so are the consequences of programs B and B'. In the first question set a substantial majority of respondents choose program A, In the second question set, a large majority of people choose the gamble.
 - How does framing a question effect people's responses?
- Representative Heuristic (p. 402)
 - Steve is very shy and withdrawn, invariably helpful, but with little interest in people, or in the world of reality. A meek and tidy soul, he has a need for order and structure, and a passion for detail.
 - How do people assess the probability that Steve is engaged in a particular occupation from a list of possibilities (for example, farmer, salesman, airline pilot, librarian, or physician)?
 - How do people order these occupations from most to least likely?
 - In the representativeness heuristic, the probability that Steve is a librarian, for example, is assessed by the degree to which he is representative of, or similar to, the stereotype of a librarian. Indeed, research with problems of this type has shown that people order the occupations by probability and by similarity in exactly the same way.
- Mental Accounting (p. 443)
 - The topical organization of mental accounts leads people to evaluate gains and losses in relative rather than in absolute terms, resulting in large variations in the rate at which money is exchanged for other things, such as the number of phone calls made to find a good buy or the willingness to drive a long distance to get one. Most consumers will find it easier to buy a car stereo system or a Persian rug, respectively, in the context of buying a car or a house than separately.

Problem A (N = 200): Imagine that you have decided to see a play and paid the admission price of \$ 10 per ticket. As you enter the theater, you discover that you have lost the ticket. The seat was not marked, and the ticket cannot be recovered.

Would you pay \$ 10 for another ticket? Yes (46%) No (54%)

Problem B (N = 183): Imagine that you have decided to see a play where admission is \$ 10 per ticket. As you enter the theater, you discover that you have lost a \$ 10 bill.

Would you still pay \$ 10 for a ticket for the play? Yes (88%) No (12%)

- Experiment: Which one are people more likely to do in this situation or other situations similar to this one?