1 ❑ Judging 'value'

✓**Expected value**

✓**Expected utility**

– **and its shortcomings….**

✓*Prospect theory*

✓*Factors that affect value determination*

✓*Complex (multi-attribute) value*

✓*A purely heuristic account*

– *Gigerenzer's theory and Brunswik's lens model*

2 ❑ Expected value

✓Expected Value = value * probability

– So, Expected value of a lottery ticket which has a 5% chance of winning $10 is 50 cents. If the ticket costs you $1 then you shouldn't buy it.

– This is the normative way to evaluate decisions.

3 ❑

4 ❑ Example

✓Would you rather play a game where:

– a) with probability 20% win $45 or

– b) with probability 25% win $30?

✓Expected value of a is $9 and of b is $7.50.

5 ❑ People do not rely on expected value

✓We will see numerous examples

✓People appear to be sub-optimal, irrational, decision makers

– At least from an expected *value* perspective

6 ❑ Expected Utility "theory"

✓Actually a class of theories

✓Proposal:

– People make their decisions based on expected *utility* of the choices.

– *Utility – the "usefulness" of the outcome.*

7 ❑ Utility is not equal to Value

✓Utility is subjectively defined

– This means that it is not "objective" but rather "subjective" - it is *personal*

8 ❑ Subjective utility - gains and losses

✓Losses tend to loom larger than gains

– Difference between $100 gain and $200 gain less than between $100 loss and $200 loss

✓Loss aversion

– Many people don't want to play a game with a 50-50 chance of winning $200 and losing $100 (Tversky & Shafir, 1992).

9 ❑ Example

✓Would you rather
- a) with probability .8 win $45 or
- b) with certainty win $30?

✓Expected value is $36 vs. $30, but most Ss choose b.

10 ❑ Example, cont.

✓Would you rather
- a) with probability .8 lose $45 or
- b) with certainty lose $30?

✓Expected value is $36 loss vs. $30 loss, but most Ss prefer a.

11 ❑ Sellers and choosers

(Kahneman, Knetsch, & Thaler, 1990)

✓The loss of utility associated with giving up a good we possess is greater than the gain in utility associated with obtaining that good.
- This is called the "endowment effect."

✓Study involving two groups of students, sellers and buyers of a mug.
- Median price established by sellers - $7.12.
- Median price buyers willing to pay - $3.12.

12 ❑ Reluctance to trade (Knetsch, 1989)

✓Half of subjects given a decorative mug and half a Swiss chocolate bar.

✓Each later shown the other gift and allowed to trade.

✓Economic theory predicts half will….
- Only 10% were willing to trade what they already had for the other gift.

13 ❑ Incremental utility

✓The incremental utility of money decreases when you have more
- How far are you willing to drive to save $5 on a $15 item? How far if you save $5 on a $200 item?

14 ❑ Expected utility assumes that people are rational

✓It is a normative theory

✓Six axioms of expected utility theory:

15 ❑ *Comparability*

✓A decision maker can compare any two alternatives and have a consistent preference (or non-preference)

16 ❑ *Transitivity*

✓Any two alternatives should have a consistent ordering of preference

✓If a>b and b>c then...
- a>c

17 ❑ *Dominance*

✓Decision makers should always choose the dominant choice.

✓*Weak dominance*

– *Better than alternative in at least one way, and equal in all others.*

✓*Strong dominance*

– *Better than alternative in all ways*

18 ❑ *Invariance*

✓Rational decision maker should be unaffected by how the information is presented

19 ❑ *Cancellation*

✓ If two alternatives are equal in some way (e.g., both include a bonus), then this factor should be ignored.

20 ❑ *Continuity/Consistency*

✓If we prefer one alternative to another (A>B) then we should prefer at least some chance of getting that alternative (A) rather than the other (B).

21 ❑ Problems with the axioms

✓People aren't rational in the expected utility sense

✓Active area of research in the past

– Debunking expected utility theory….

22 ❑ The Allais paradox – the Cancellation axiom violated

✓Imagine the following choice

– A: You get $1 million

– B: You get $2.5 million with probability of 10%, $1 million with probability of 89%, and $0 with probability of 1%

✓Most people prefer A by a lot.

23 ❑ Allais paradox, cont.

✓Now, what about the following?

– A: You get $1 million with probability of 11%, $0 with probability of 89%

– B: You get $2.5 million with probability of 10%, $0 with probability of 90%

✓Now, most people prefer B.

– (For an exercise, try computing the expected value of each choice)

24 So, what's the problem? Seems right to me!

✓Let's break this down:

– Option 1:

- A: $1 mil * 11% + **($1 mil * 89%**)
- B: $2.5 mil * 10% + **($1 mil * 89%)**

– Option 2:

- A: $1 mil * 11%
- B: $2.5 mil * 10%

✓The only change was in the addition of the same thing to each option.

25 Intransitivity

✓Simple rule for deciding among applicants

- If score difference is greater than 15, go with applicant with higher score
- If difference < 15, choose applicant with more experience

26 Applicants

✓Prefer B over A (experience)

✓Prefer C over B (experience)

✓Prefer A over C (score)

27 Is expected utility dehumanizing?

✓The use of expected 'utility' rather than 'value' is an important step.

- Although all of the numbers and probabilities seem dehumanizing, the aspect of 'utility' is decidedly not.
  - *Utility* is unique to the person making the decision.
  - A good decision for you may not constitute a good one for me because we value different things and have different initial conditions.

28 Examples of how utility is personal...

- Trying to decide whether to complete your psych degree or switch to business?
- How much do you value a counseling career over a business career?
- How many years do you have left to complete the degree?
- How much money do you have available to pay for school?

29 Rationality?

✓Theories like expected utility theory encourage us:

- To behave **rationally and consistently** given our own desires and needs and
- To **optimize** our outcomes.

30 Is there anything better?

✓Although expected utility theory hasn't fared well, it has spawned better theories.

✓The issue of utility will be pursued more fully in our discussion of prospect theory.

- Prospect theory (discussed next) is an alternative normative theory
- Other purely descriptive theories will also be considered