Theory Homework

The assignment was:

- Following Lave and March, make an observation (e.g., find a correlation between X and Y), and then build two or three competing theories to explain the result. These theories can be your own theories, or drawn from the literature. Also, the observation doesn't have to be a known, incontrovertible fact. For example, you might claim that democrats are more likely than republicans to own yellow cars. **Now construct a couple of derivations from each of your theories that would help distinguish between them (see the Lave and March book for examples)**. Or see handout. Write this up and email it to me by Tuesday night before class.

Here are the students' answers. They are not necessarily good ones … Apologies if I missed anyone's answer. Do let me know …

Using AI

Step 1: Observe some facts

· Younger employees are more likely to use AI

Step 2: Look at these facts as though they were the end of the result of some unknown process (model). Then speculate about process that might have produced such a results

Model 1

· Younger employees are more likely to use AI due to their familiarity with the technology

Implication

· Model 1 predicts that younger employees, such as Millennials and Generation Z, are familiar with AI due to their experiences in college and internships, which provide them with relevant exposure.

Model 2

· Younger employees are more likely to use AI to minimize interactions

Implication

· Model 2 predicts that younger employees, compared to older generations or veterans, will use AI to independently acquire knowledge and skills, with less reliance on interactions with

other employees. Compared to previous generations, they are expected to form fewer ties within the organization over time.

Model 3

· Youngers employees are more likely to use AI because they need to acquire more information

Implication

· Model 3 predicts that younger employees may not have as much knowledge but need to acquire more information to complete their tasks. It also suggests that employees with 30 years of experience already possess the necessary knowledge and, therefore, will not need to rely on AI as much as younger employees. Moreover, the model also predicts that younger employees who come from good schools are more educated and will not need AI as much.

Step 3: Then deduce other results (implications/ consequences/ predictions) from the model

	Familiarity with technology	Minimizing interactions	Need for more information	Observed?
Would you expect that, after five years in the organization, they will know fewer people?	No	Yes	No	Yes
Would they advocate for AI?	Yes	No	yes	No
Will they use AI less over time?	No	No	Yes	Yes

Liberal paralysis

Observation - Liberals experience more decision difficulty than conservatives when having to choose something from a large assortment of options (e.g. products).

Theory 1 - Liberals are more risk averse, feeling a greater responsibility for the outcome, and leading to a more cautious and slower decision-making process of considering each option. Conservatives, by contrast, feel more confident or comfortable with risk and thus are able to choose with less consideration.

Theory 2 - Liberals are more open to new experiences/ideas, making them more likely to explore different possibilities before committing to a choice. Meanwhile, conservatives value stability and tradition, making them more decisive as they can fall back on established preferences.

Theory 3 - Liberals experience more choice overload and are more easily overwhelmed by a large number of options, whereas conservatives do not.

T4. libs want to be socially responsible, so more investigate

Derivations:

1- In situations where there is no perceived risk (e.g. choosing what they want to eat for dinner), liberals still experience difficulty deciding.

Theory 1 - No (the absence of risk should reduce liberals' difficulty to decide)
Theory 2 - Yes (liberals will still want to consider all options despite lack of risk)
Theory 3 - Yes (choice overload occurs regardless of lack of risk)

2- Given a situation in which the options have all been experienced/used by the liberal making the choice, they still experience difficulty deciding.

Theory 1 - Maybe? (experience could lower perceived risk, leading this one to be a bit ambiguous)
Theory 2 - No (if none of the options are new, they should not need to explore their options before deciding)
Theory 3 - Yes (choice overload occurs regardless of experience)

3- In situations where there are few choices, liberals still experience difficulty deciding.

Theory 1 - Yes (liberals would still feel risk and need time to consider the few options)
Theory 2 - Yes (liberals would still want to explore the few options)
Theory 3 - No (overload would not occur with few options)

	risk averse, feeling a greater responsibility for the outcome	open to new experiences/ideas	easily overwhelmed	Obs
Difficulty deciding in Low risk situation	no	yes	yes	
Difficulty deciding when options are familiar	yes?	no	yes	
Difficulty deciding when few options	yes	yes	no?	

Getting wet

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1. Observation.
When running in the rain, a person seem to get wetter compared to walking.
2. Theories.

T1: When running, the angle and surface area exposed to the rain might be larger than when walking, causing the person to come into contact with more raindrops.
T2: When running, the increased wind speed causes more raindrops to be blown onto the person, making you get wet faster.
T3: When running, heavier footsteps may splash more water, causing the person to not only get wet from the rain above but also from the water on the ground.
3. Derivations.
D1: Does walking normally cause a person to get wetter compared to walking faceup (which increases the contact area with raindrops)?
D2 : Does a person get wetter walking in the rain when the wind speed is lower compared to when the wind speed is higher?
D3: Does running on flat ground without puddles still cause you to get wetter?
Question T1 T2 T3
D1 No Yes Yes
D2 Yes* No Yes
D3 Yes Yes No

Question	T1	T2	T3
D1	No	Yes	Yes
D2	Yes	No	Yes
D3	Yes	Yes	No

Chatgpt:

Question	T1	T2	T3
D1 (Walking normally vs. face-up)	No	No	No
D2 (Effect of wind speed)	No	Yes	No
D3 (Running without puddles)	No	Yes	No

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Buying a suit

- Observation: Women spend more time than men when deciding which suit to buy in a store.

- Theory 1: Society places higher expectations on women's appearance than men's. As a result, women tend to look for a perfect fit, while men settle for something that is "good enough". Since finding a perfect suit requires meeting more criteria than simply finding an acceptable option, it takes women a longer time to find the right one and make a purchase decision.
- Theory 2: For the same type of suit, women's design offers more variations than men's. Hence, women face a larger set of options, while men choose from a smaller choice set. As human beings have limited cognitive resources, making decisions from a bigger choice set is much harder and takes people a longer time. Thus, female consumers spend more time deciding which to buy.
- Theory 3: From an evolutionary perspective, males and females develop different skillsets that persist in modern society. In ancient times, women gathered food, requiring their patience to find the best fruit. Conversely, men hunted, requiring them to make quick decisions to catch prey. These thought patterns have carried into modern behavior. Women subconsciously view choosing a suit as a gathering, using patience to pick the best option, while males subconsciously see it as hunting and use their decisiveness to make a quick choice.

Attention span

« People who use their phones too frequently have a short attention span. »

(1) Attention Span Reduction Theory: When a person uses their phone too often, they develop shorter attention spans over time because they train their brains to adapt to short form, immediate rewards.
Derivation 1: When a person forces themselves to use their phone less frequently, their attention span improves.
Derivation 2: When a person uses their phone for activities that require significant attention, their attention span stays the same.

(2) Distraction Theory: People who have a difficulty focusing are more prone to accept the allure of short form, immediate rewards offered by many of apps in their phones.
Derivation 1: When people who have a difficulty focusing partake in an activity that holds their focus, they don't use their phone as often.
Derivation 2: When people who have a difficulty focusing don't have access to their phone, they use other tools to distract themselves.

Question	Attention Span Reduction Theory	Distraction Theory

What happens when a person is forced to not use their phone?	The person's attention span improves over time.	The person finds something else to distract themselves with.
What happens when a person has other means of distracting themselves available?	The person chooses the phone.	The person may choose one of the other means.

Birthing practices

The NFHS-5 dataset (National Family Health Survey of India), a randomized five-year survey that tracks various socio-health measures across the country, has some interesting findings.

The observed correlation between the change in literate women and change for birth by skilled healthcare personnel across the NFHS-4 and NFHS-5 survey is correlated at a degree of .42.

However, if we look at the literacy rate for women in NFHS-4 against the change for birth carried out by skilled healthcare personnel across NFHS-4 and NFHS-5 surveys we observe a strong negative correlation of -0.39 (NFHS Policy Tracker Harvard, 2021).

I will try to explain this observed discrepancy with the following theories.

Theory 1: Diminishing Returns Theory

This theory argues that states with already high levels of literacy had diminishing returns in the increase of birth rate by skilled personnel. This is because at a higher level of observed effect in women's literacy, the change in birth rate by skilled personnel might not be substantial, hence we observe a seemingly un-intuitive negative correlation. However, this would allow for a positive correlation to appear as the changes for a large range of distributions are significantly discernible.

Derivation 1.1: If this theory is correct, we would expect regions with low initial literacy rates (NFHS-4) to show more significant improvements in both literacy and healthcare outcomes (e.g., skilled birth attendance) compared to regions with already high literacy rates.

Derivation 1.2: We would also expect the positive correlation between changes in literacy and changes in healthcare outcomes (+0.42) to be more substantial in areas that initially had lower levels of both indicators. This suggests that the negative correlation (-0.39) between initial literacy and change in healthcare outcomes reflects a "catch-up" effect, where regions starting with low literacy have more room for improvement.

Test: Rajasthan (the region with a lower level of literacy showed an effect size of -.47, and Tamil Nadu showed an effect size of -0.03: similarly for the change-on-change effect, Rajasthan showed a whopping correlation of .63, whereas Tamil Nadu showed a correlation of .26).

Theory 2 – Independence between institutions theory

This theory argues that states that had initially lower levels of female literacy rate had substantially lower levels of socio-economic development. However, given that these two policies came under separate ministries of government (education and healthcare). They might be unrelated for a certain period and had no seeming effect on each other. This might have allowed already developed states to implement these policies differently and at different intensities over different timelines.

Derivation 2.1: If this is true, we will observe a more intense effect in the implementation of healthcare policies with states that have lower rates of education because they might have higher initial rates of birth carried on by non-skilled personnel.

Conversely, states with already high levels of literacy might not run any awareness programs regarding the implementation of birth carried out by skilled personnel.

Derivation 2.2: This theory also suggests that within a given state with a very high rate of female literacy rate, we must observe a higher number of districts that have almost all the births in a state carried out by skilled personnel.

(If we look at the state of Kerala, the aggregate rate of births by skilled personnel rate of 100 percent, is likewise true for Tamil Nadu, however, the same number drops to close to 60 percent for north-eastern Indian states.)