The Structure of Choice: Insights from 100K Decision Problems

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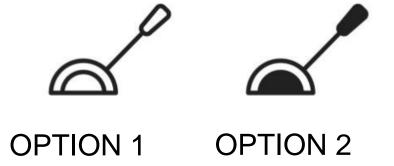
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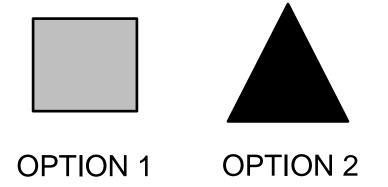
New York City

OPTION 1 OPTION 2

\$10 \$20 100% 60%

	OPTION 1	OPTION 2
QUALITY	X	✓
PRICE	√	X





Thinking about divorce

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I know I'll be seen as the bad guy if I file for divorce and will lose support of my family and our friends. I don't want to cheat on her because that won't solve the problem, but I've been tempted many times and TBH I regret not doing that sometimes. I don't want to hurt my wife or daughters, but I think I don't want to be alone in a marriage for the rest of my life. I just want another adult who loves me and wants to be with me physically again. I know I shouldn't expect sex as part of marriage, and it is 100% her call if we ever have sex again, so I wonder if I should just leave to be happy. BTW, I don't do porn in the house because of my daughters.

Should I leave my family or continue to suffer for the sake of the kids? Any advice on how to get through this is appreciated.

New Y

 \square







Should I try to find a better job?

I'm 30 years old and I currently work at Walmart as a cap 2 associate in Waterbury, CT. My current rate of pay is 16.50 an hour. I'm also paid bi-weekly. I also have a hard time saving money. I'm also the only person in the household who works. My mother and older brother are both disabled. I feel like 16.50 is a poverty wage. I'm responsible for mostly everything. The rent I pay is \$660. I also hope to get my own place at some point but I don't have enough money saved up. I feel like I can do so much better than what I'm doing. Should I try to find a better paying job? What hourly wage is considered to be a livable wage?









Driving my moms car

Hi I'm 16 about to get my learners in a month I'm taking my moms car to the store it's literally a 3 min drive I've never driven on the roads I've messed around in parking lots before that's about it if your wondering why I don't just walk it's because the side walk is closed and the walk takes around 10 mins because of the path you have to take with the roads being closed it's gonna take close to 30 mins and I got something I have to do in 30 mins that I can't miss my mom does not know about what's happening in 30mins







Advice

This is a place where you can ask for advice on many subjects. Everybody has issues that they run into, and everyone needs advice every now and again. This is Reddit's very own solution-hub.

924K Members

1.4K

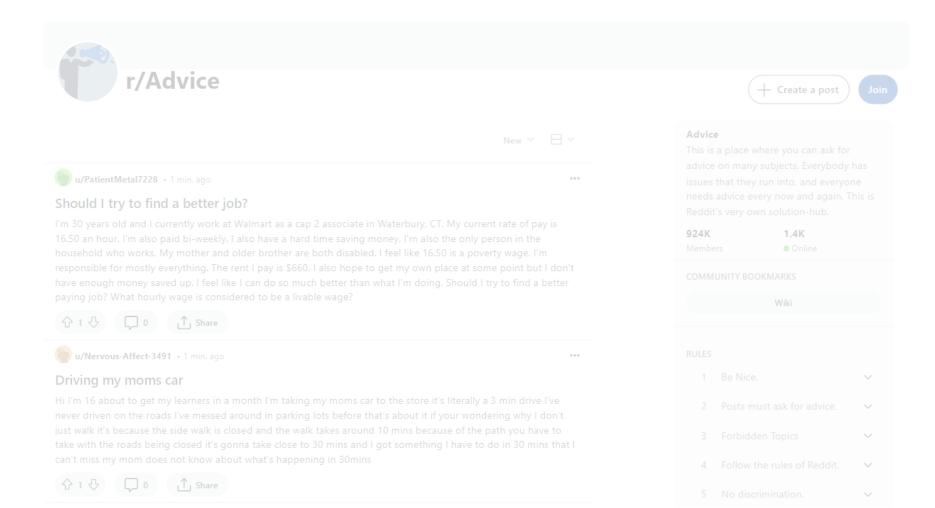
Online

COMMUNITY BOOKMARKS

Wiki

RULES

- Be Nice.
- Posts must ask for advice.
- 3 Forbidden Topics
- 4 Follow the rules of Reddit.
- No discrimination.



Other datasets:

- Ask Men Advice
- Ask Women Advice
- Friendship Advice
- Career Advice





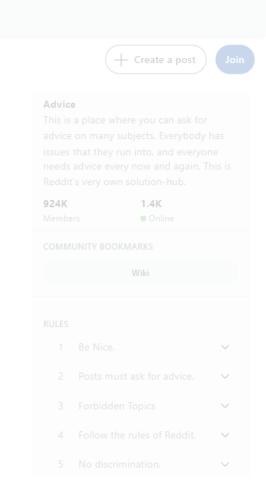






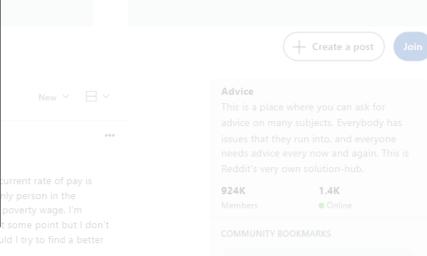








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Study 1: N = 500 Representative US participants describing important life choices (preregistered)

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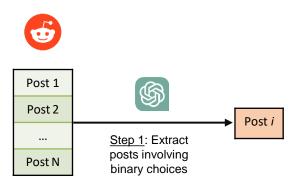
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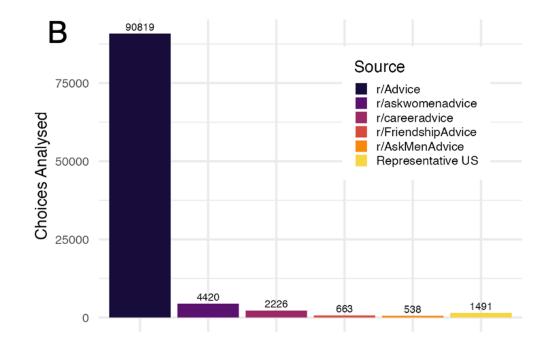
Pipeline



Post 1
Post 2
...
Post N

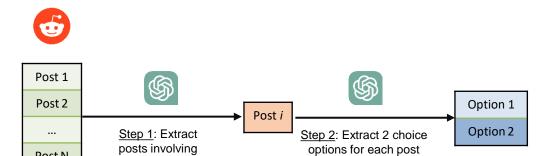
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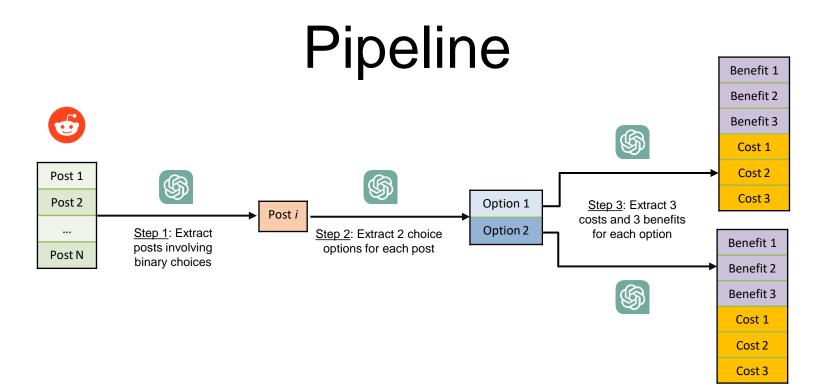
~ 100K total choice problems

Pipeline



Post N

binary choices



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Option 1: Leave the family

Benefits

- 1. Opportunity to pursue personal happiness and fulfillment
- 2. Ability to seek a healthier and more satisfying relationship
- 3. Freedom from a stagnant and unfulfilling marriage

Costs

- 1. Emotional impact on the children and potential strain on their well-being
- 2. Loss of support from family and friends who may view the poster negatively
- 3. Potential financial and logistical challenges related to divorce and co-parenting

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Option 2: Continue to suffer for the sake of kids

Benefits

- 1. Maintaining stability and familiar family dynamics for the children
- 2. Avoiding potential disruption and adverse effects on their emotional well-being
- 3. Potentially preserving relationships with extended family and mutual friends

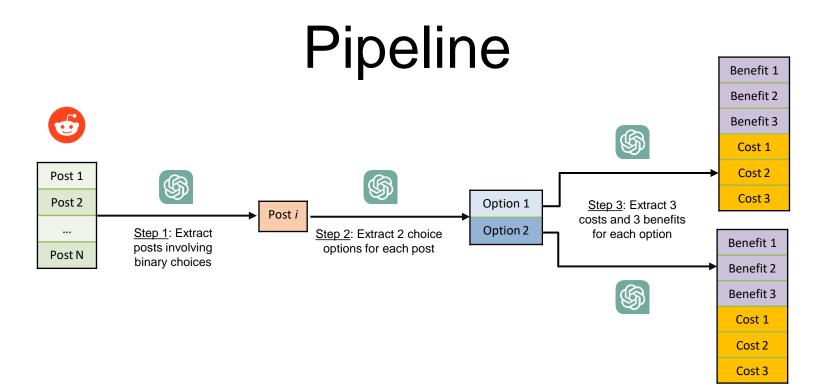
Costs

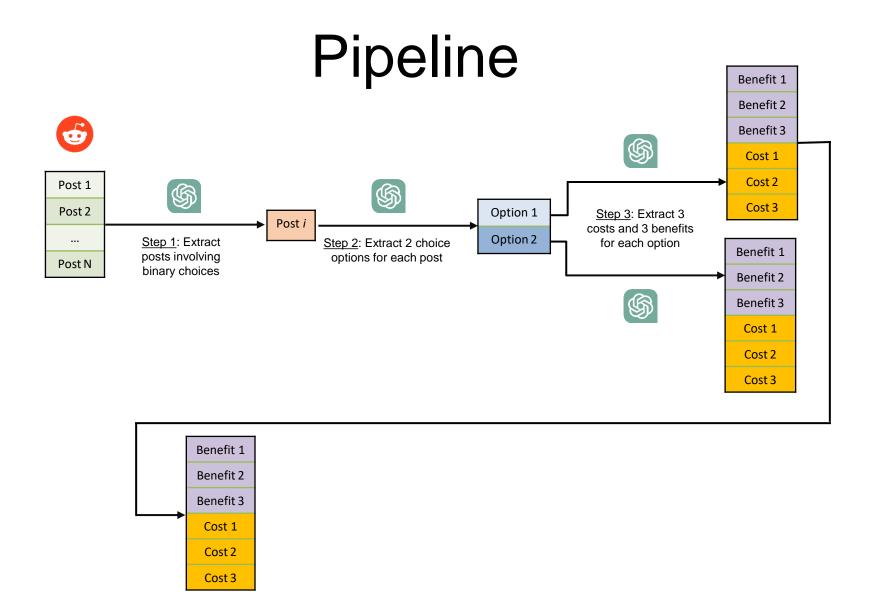
- 1. Personal unhappiness and dissatisfaction within the marriage
- 2. Mental and emotional toll of staying in an unfulfilling relationship
- 3. Limited opportunity for personal growth and self-fulfillment

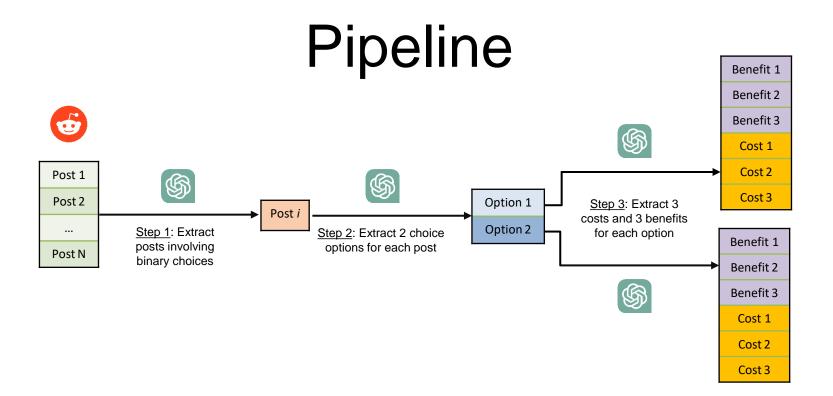
Theory-based Attributes

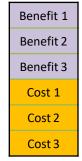
Attribute Type	#	Example Attribute
decision theory	5	safety vs. risk
decision outcomes	11	money
consumer behavior	6	experiential consumption
emotions	6	anger
self-determination	3	social relatedness
values	10	tradition
goals	135	sexual desirability
moral foundations	5	harm
person perception	10	competence
SVO	4	competitiveness
altruism	9	efficiency
fairness	3	procedural fairness

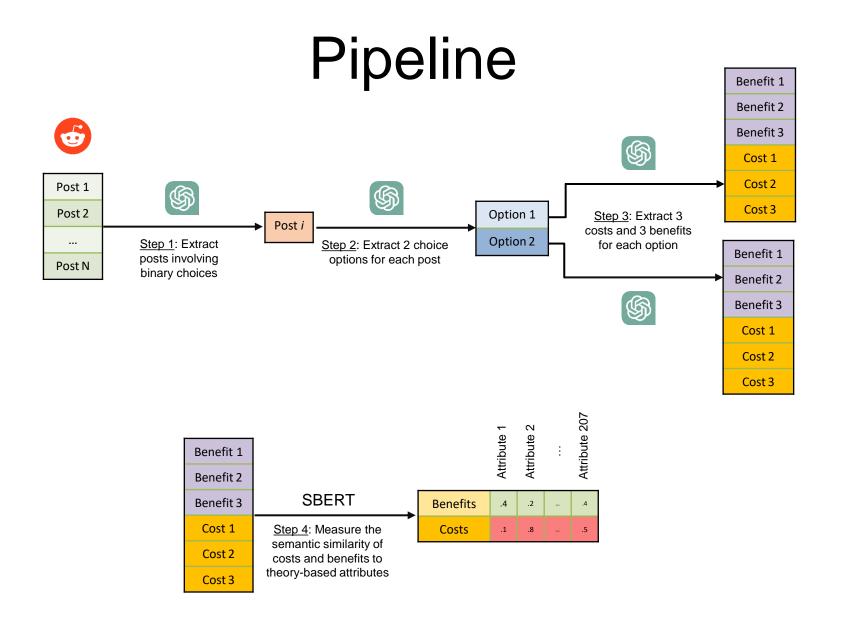
Total 207 distinct attributes

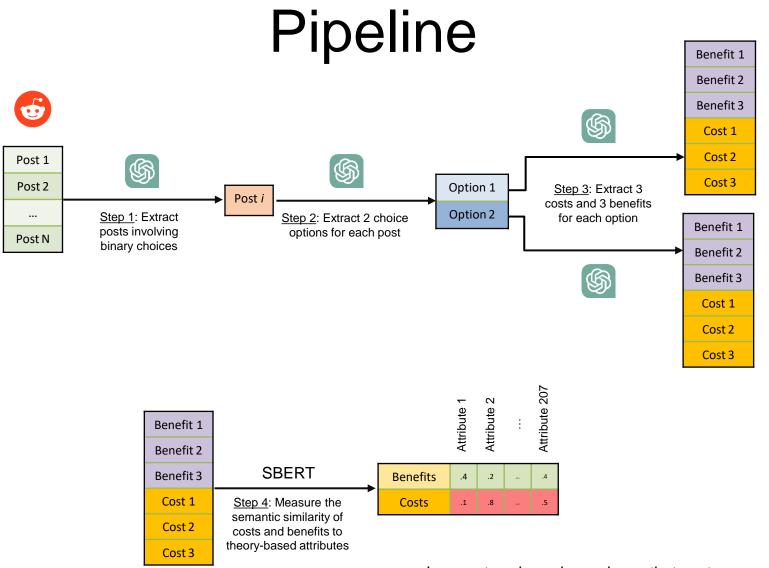








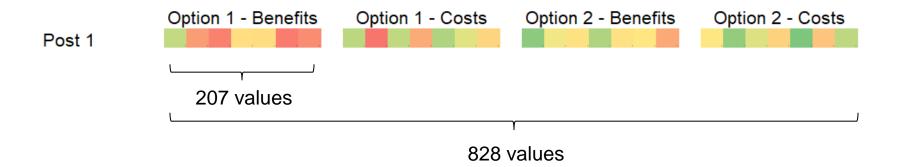


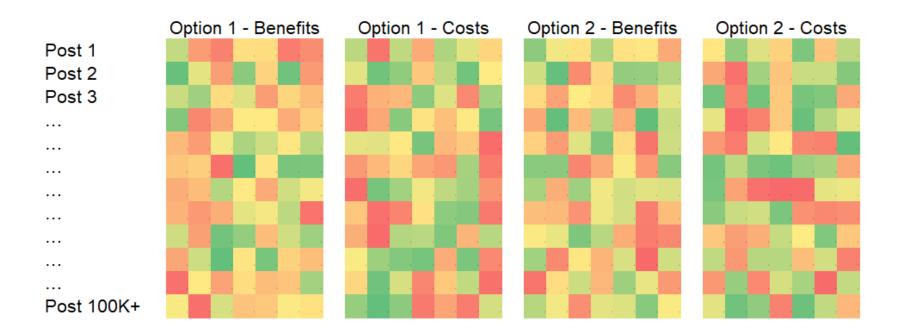


In recent work, we have shown that sentence embeddings can quantify self-reported reasons Zhao et al., 2022; Psych. Review; Bhatia, 2024, JEP:General











~ 100M coded values

Validation

Study 1 \rightarrow Attribute frequencies in r/Advice have correlation of r = 0.90 with decisions faced by representative US participants

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Study 2 → GPT summaries are judged by online participants to be accurate 91% of the time

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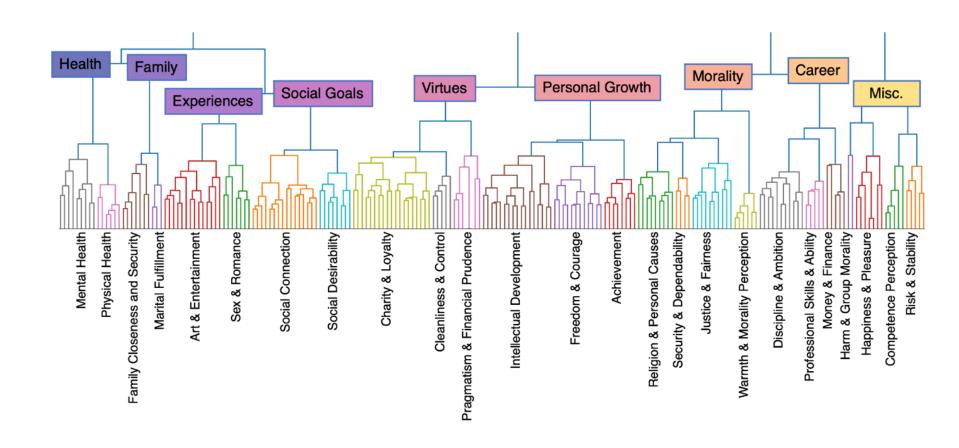
Study 2 → GPT summaries are judged by online participants to be accurate 91% of the time

Study 3 → SBERT attribute quantification is judged by online participants to be accurate 98% of the time



~ 100M coded values

Attribute Structure



Hierarchical clustering on choice option X attributes matrix

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Attribute Structure

Option 1 (leave)

Option 2 (stay)

Happiness and Pleasure Sex and Romance	Freedom and Courage Physical Health Mental Health	Art and Entertainment Professional Skills and Ability Money and Finance	Intellectual Development Marital Fulfillment Pragmatism and Financial Prudence	Competence Perception Discipline and Ambition Religion and Personal Causes Harm and Group Morality Social Desirability	Cleanliness and Control Justice and Fairness Charity and Loyalty	Security and Dependability Warmth and Morality Perception Social Connection Family Closeness and Security

Analysis

With the ability to quantify attribute structures in naturalistic choices we can:

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1. Study attribute tradeoffs

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Ecological Structure

- 1. Study attribute tradeoffs
- 2. Study social context
- 3. Study temporal context
- 4. Predict preference

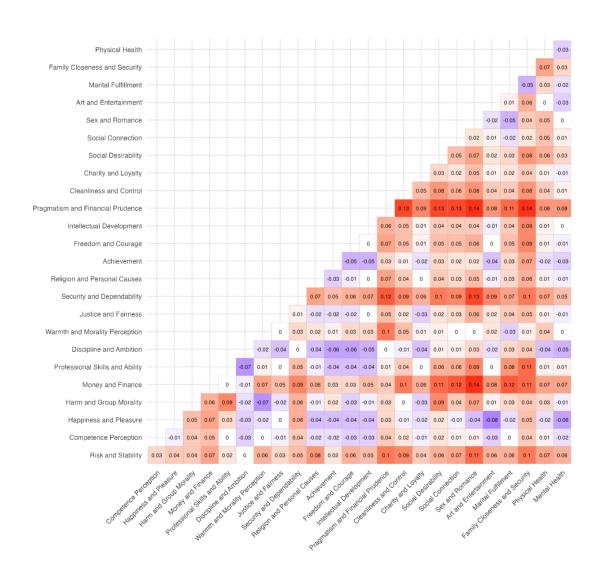
- 1. Study attribute tradeoffs
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- 3. Study temporal context
- 4. Predict preference
- 5. Understand decision processes

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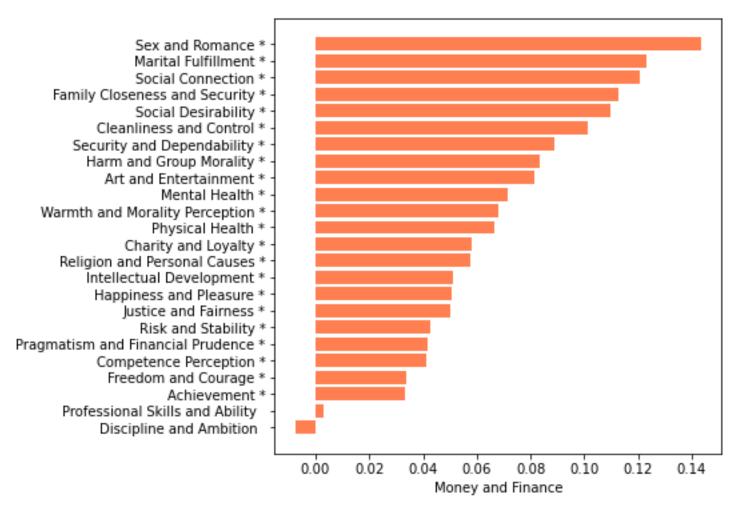
Human Behavior

- 1. Study attribute tradeoffs
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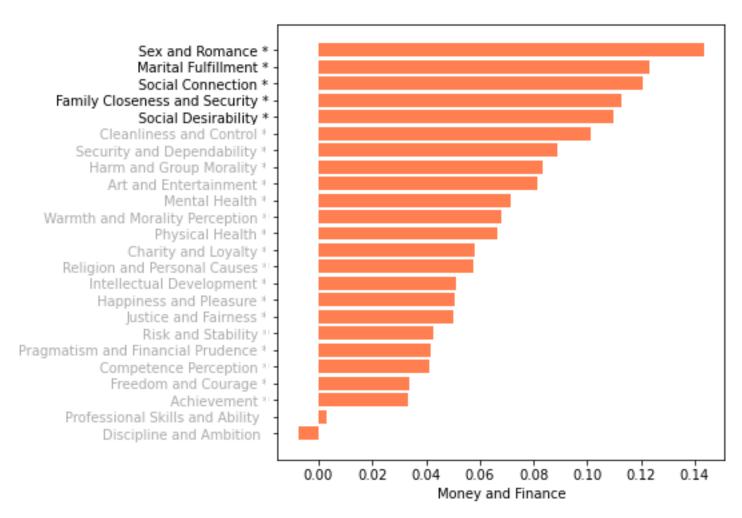


Pairwise correlation of attribute frequencies across options in the same dilemma

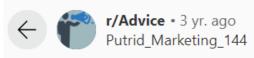
|r| > 0.02 is significant at p < 0.05 Bonferroni corrected



Sorted by pairwise correlation of attribute frequencies across options * indicates p < 0.05 Bonferroni corrected



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Should I apply for the job?!

I (28F) am engaged to (24M) and we have a 1 year old daughter together. We currently both have jobs with schedule of M-F 8-5pm with weekends off. However, I have the opportunity to apply for a much higher paying position however, it is shift work. I would be working 4 days out of the week with 3 days off. Meaning one more day with my daughter. The schedule changes every 3 months. I have really being thinking of the pros and cons. Some close friends tell me to go for it and other close friends tell me I shouldn't since I have a little one. They say my daughter needs her mom more than dad, but if the roles were reversed I know they wouldn't tell HIM the same as me. My fiancée tells me to go for it but I know he rather I didn't. Should I just do it? No rude comments please.

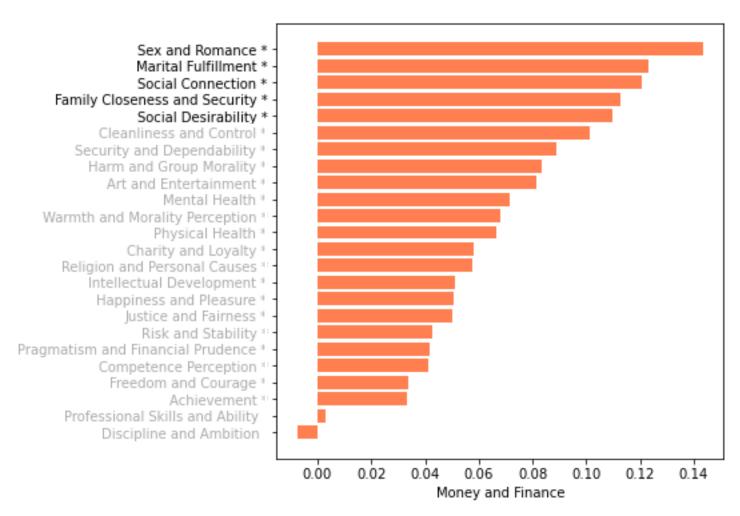
Archived post. New comments cannot be posted and votes cannot be cast.



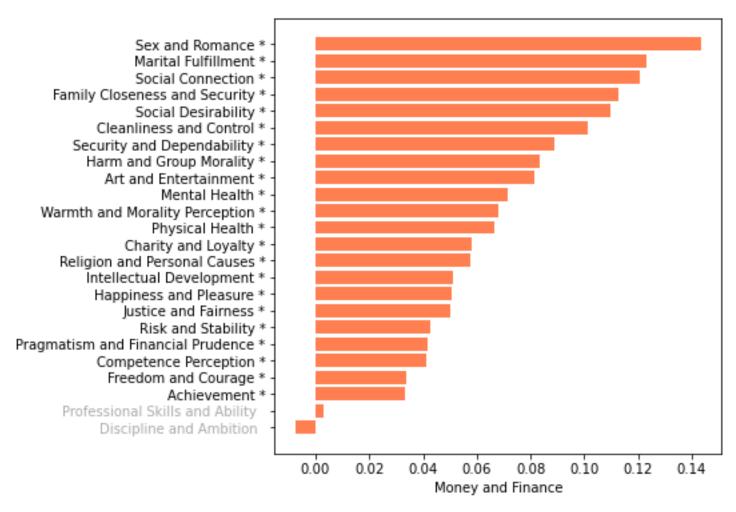








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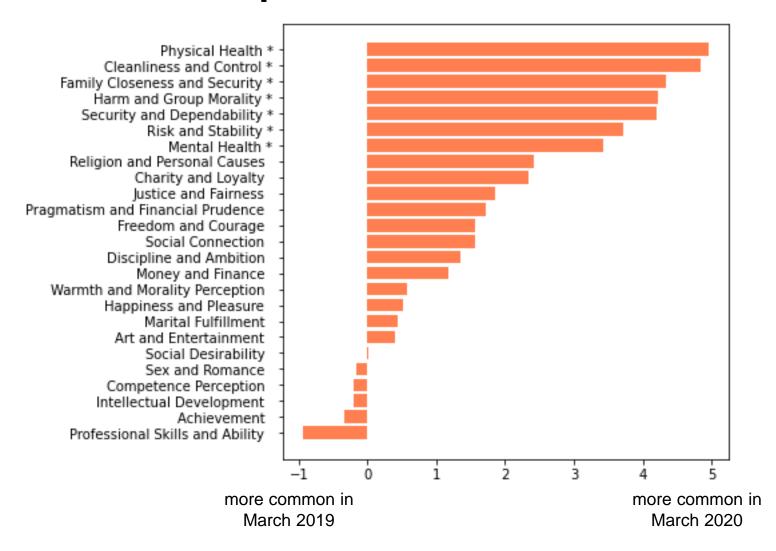


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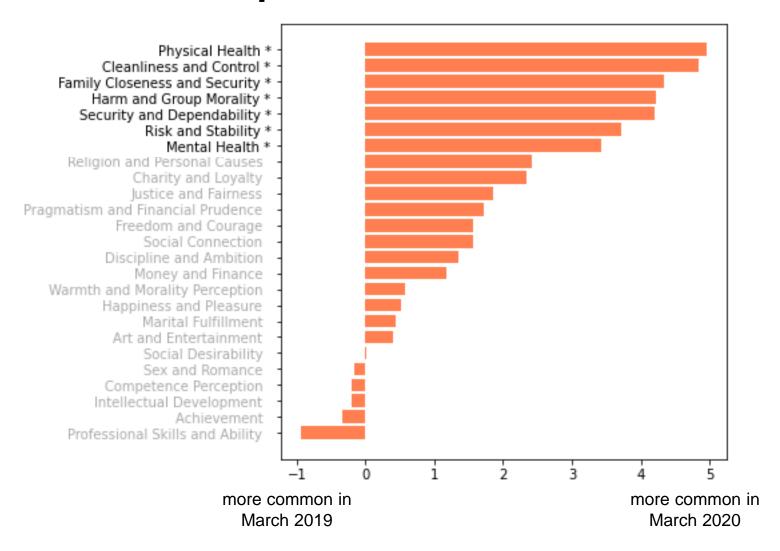
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Temporal Context



Temporal Context



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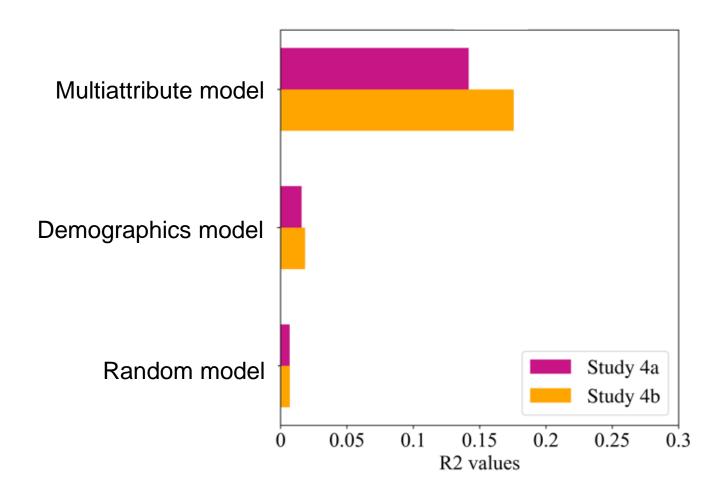
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In Study 4a (N = 300) and Study 4b (N = 300) online participants evaluated r/Advice dilemmas (preregistered)

Choice Prediction



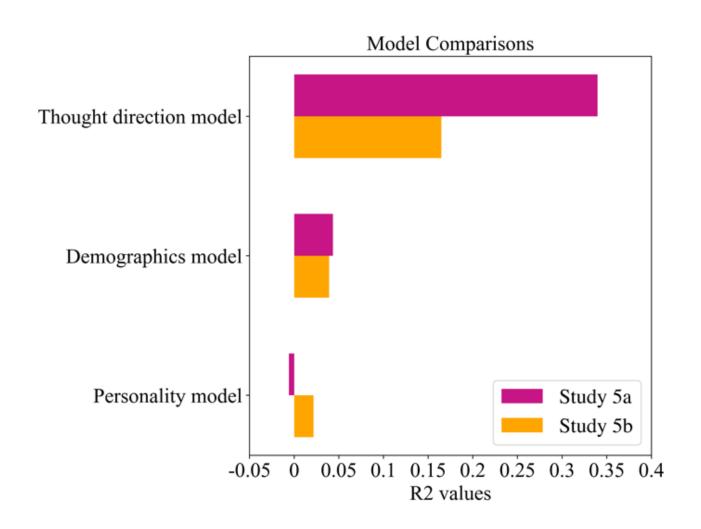
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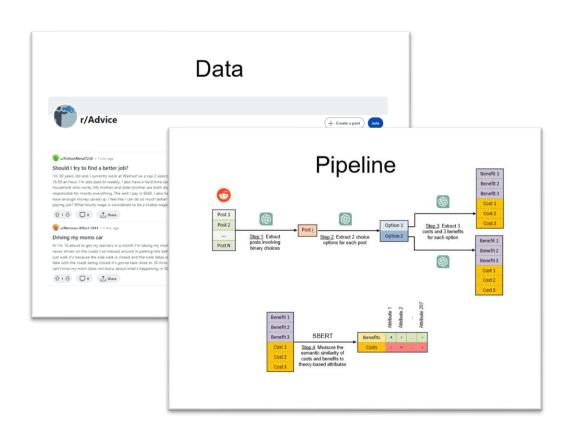
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In Study 5a (N = 300) and Study 5b (N = 300) online participants evaluated these dilemmas while thinking out loud

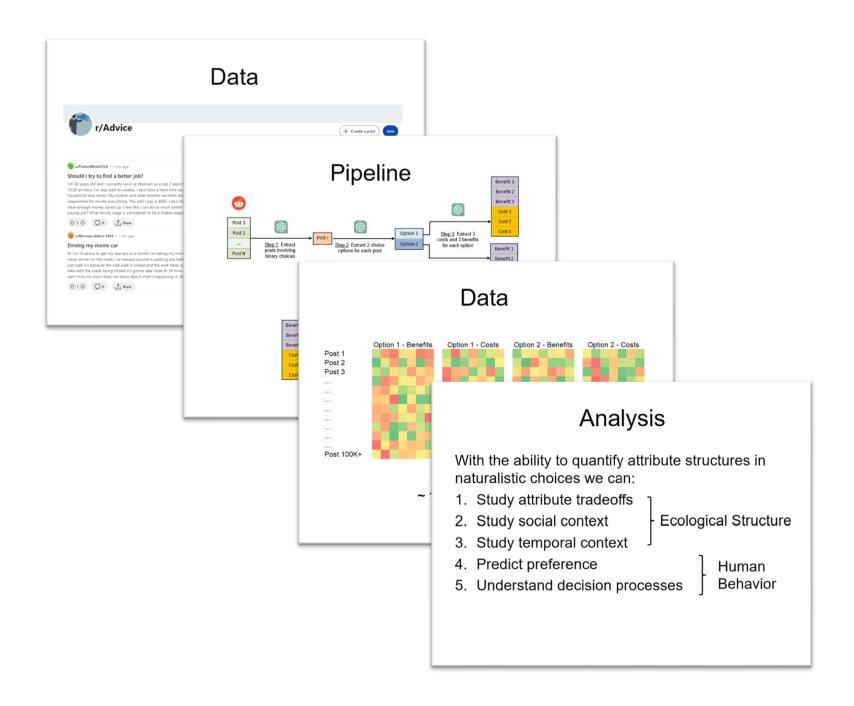
Decision Process

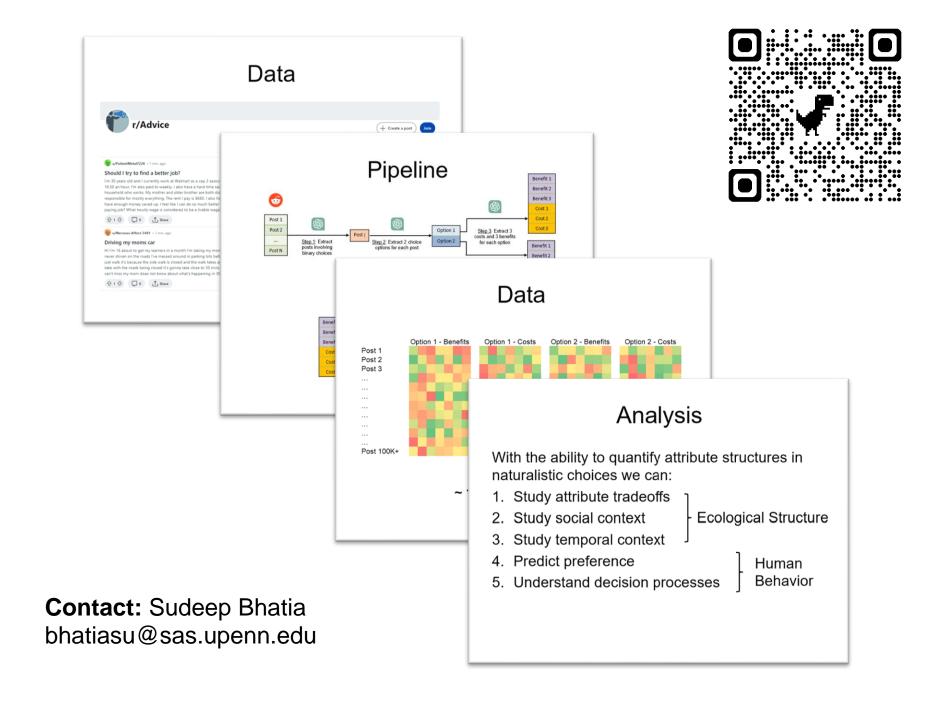


Data r/Advice + Create a post Join Advice This is a place where you can ask for advice on many subjects. Everybody has issues that they run into, and everyone needs advice every now and again. This is New ∨ ⊟ ∨ u/PatientMetal7228 + 1 min. ago Should I try to find a better job? I'm 30 year old and i connect, work as Yolinest as a cap 2 associate in Yellowbury, CL My connect safe of pay is 15.50 and hour. I'm begat blo-meeth, 31 on howe a had offer some growing motine, I'm ask to be only person in the household who works. My mother and older borders are both disabled. Feel like 16.50 is a povery mage. Fin responsible for more livery everyhing. The rest is pay is 560,1 also hope to get ny more place at some point but ident have enough money saved up. I feel like it can do so must better than what I'm doing. Should I try to find a better paying poll? What fourly wage is considered to be a leveled wage. 924K 1.4K COMMUNITY BOOKMARKS Wki ⊕ 1 ⊕ □ o 🗘 Share ⊕ u/Nervous-Affect-3491 → 1 min. ago RULES 1 Be Nice. Driving my moms car It is 15 do but to get my learners in a month I'm taking my mons car to the store it's literally a 3 min drive I've never driven on the roads I've messed around in passing lots before that's about it if your wondering shy! door. I will stake literally be the side walk is closed and the walk take awound I've mis because of the path you have to take with the roads being closed it's goins take close to 30 min and I got amonthing I have to do in 30 mins that I car! mins my monders of town about what's happening of John to meeting I have to do in 30 mins that I car! mins my monders of town about what's happening of John to meeting I have to do in 30 mins that I car! mins my monders of town about half's happening of John to meeting I have to do in 30 mins that I car! mins my monders of town about which has happening of the passing that I want to the control of the passing that I can be a support to the control of the passing that I want to be a support to the passing that I want to be a support to the passing that I want to be a support to the passing that I want to the passing that I want to be a support to the passing tha 2 Posts must ask for advice. 3 Forbidden Topics 4 Follow the rules of Reddit. 5 No discrimination.

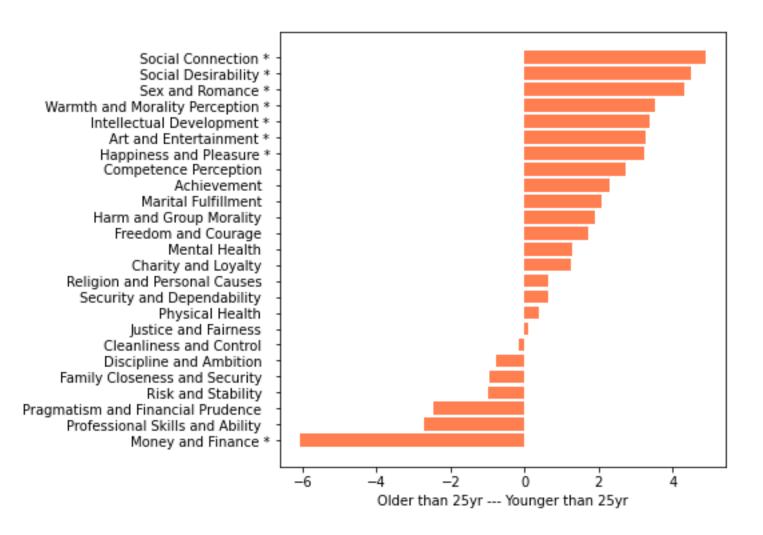




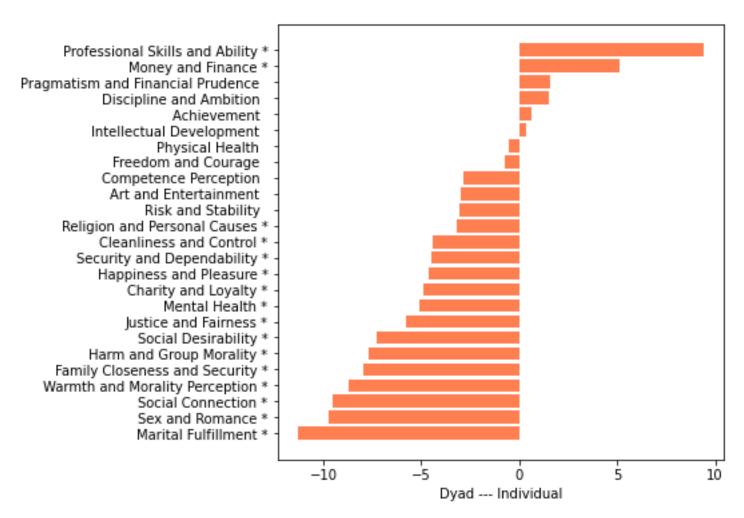




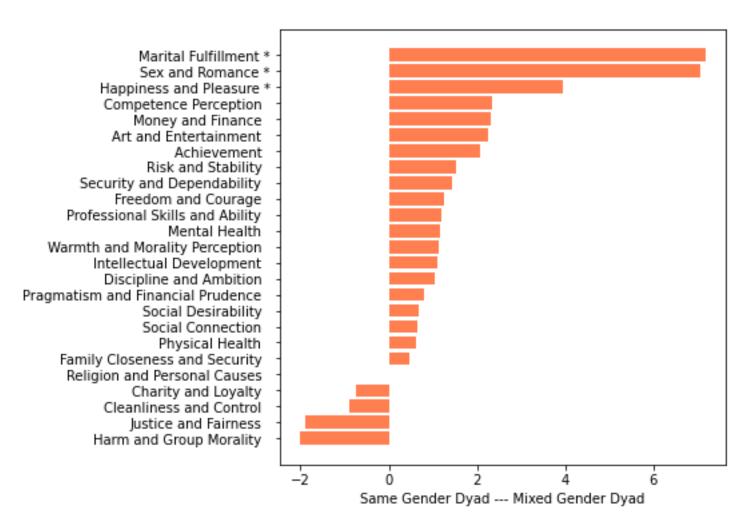
Social Context



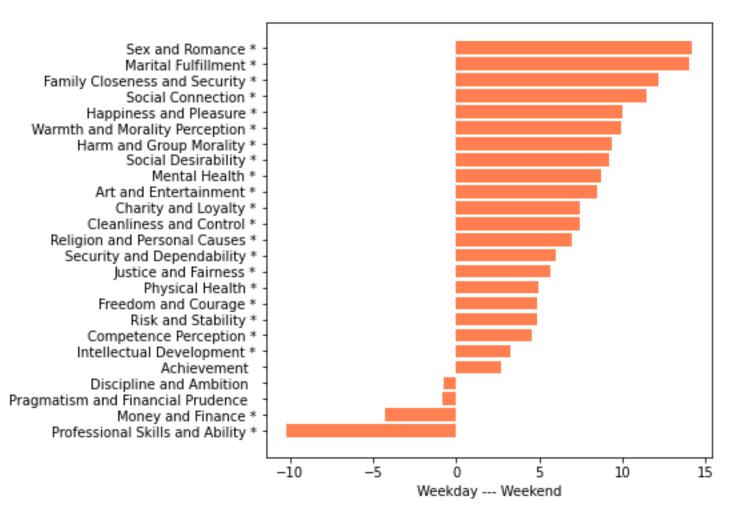
Social Context

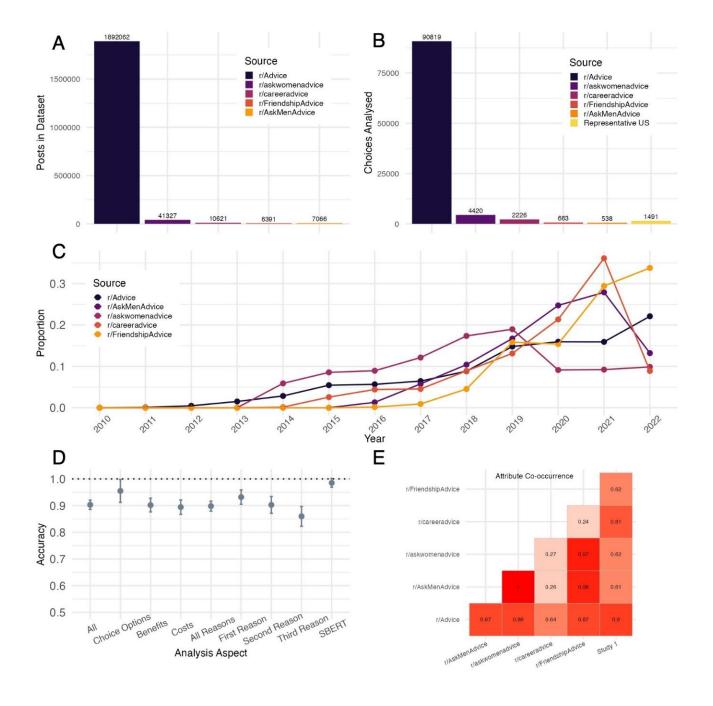


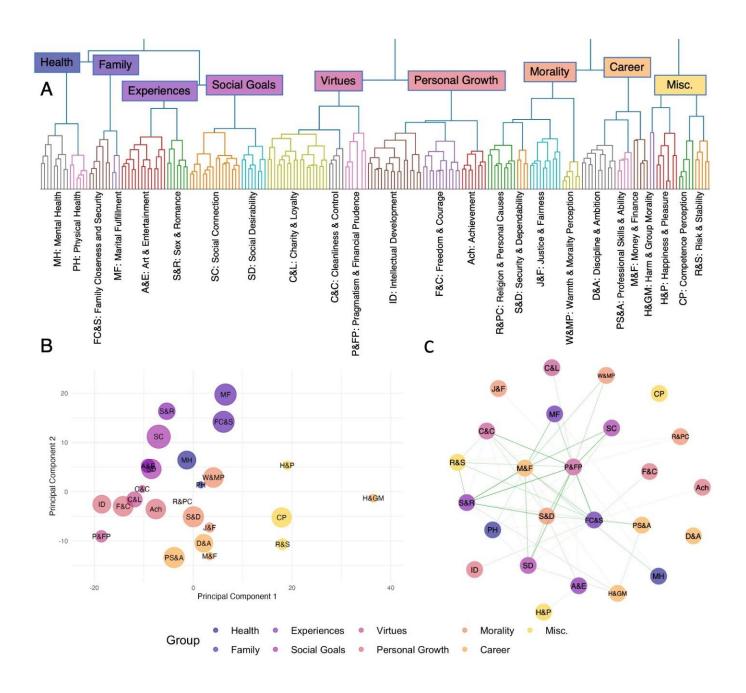
Social Context



Temporal Context

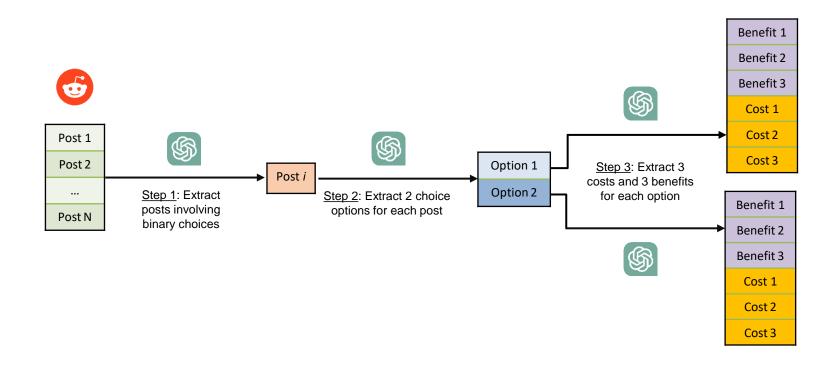




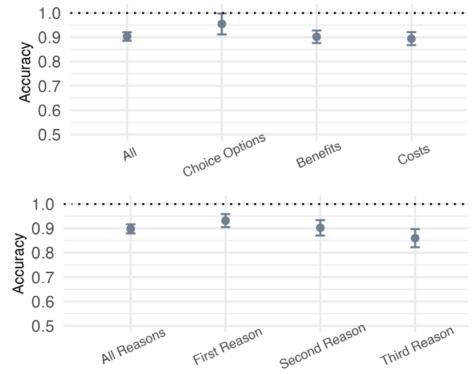


(L	∆ diff	-0.02	0	0.02	-0.01	-0.05	-0.1	-0.04	0.04	-0.02	0	-0.03	-0.03	-0.02	-0.03	-0.05	-0.02	-0.02	0.02	0.05	0.13	0	0.18	0.03	-0.03	0.01
Gender (Combination)	same	-0.01		0	0.03	-0.05	-0.1	-0.03		0.02	0	-0.01			-0.03		0.01	0.01	0.03		0.04	-0.01	0.06	0.05	-0.02	
	1f	0.02	0	-0.01	0	0.05	0.09	0.04	-0.04	0.01	0	0.02	0.02	0.02	0.03	0.04	0.02	0.01	-0.03	-0.06	-0.09	0	-0.12	-0.03	0.03	0
der ((1m	0.01	0.01	-0.01	-0.02	0.06	0.11	0.04	-0.05	-0.01	0	0.01	0.04	0.03	0.04	0.04	0	0	-0.02	-0.05	-0.08	0.01	-0.12	-0.06	0.03	-0.02
Gen																										
_	yo	-0.01	-0.01	0	0.01	-0.03	-0.07	-0.03	0.03	0.01	0	0	-0.03	-0.01	-0.02	-0.03	0	0.01	0	0.02	0.03	-0.01	0.07	0.07	-0.01	0.01
Age (Combination)	00	0	-0.01	0	0	-0.02	-0.07	-0.02	0.01	0	0	-0.01	-0.03	-0.02	-0.03	-0.01	0.01	0	0	0.01	0.05	-0.01	0.1	0.05	-0.01	0.01
ombir	уу	-0.02	0.01	0.03	0	-0.08	-0.11	-0.05	0.06	-0.02	0	-0.03	-0.02	-0.02	-0.02	-0.06	-0.03	-0.01	0.05	0.09	0.13	0	0.14	0	-0.04	0.01
je (C	0	0.03	0	-0.01	-0.01	0.09	0.15	0.06	-0.06	0	0	0.02	0.04	0.02	0.03	0.06	0.01	0	-0.04	-0.07	-0.12	0	-0.16	-0.06	0.03	-0.01
Å	У	0.01	0.01	-0.01	-0.01	0.03	0.1	0.04	-0.04	0	-0.01	0.02	0.04	0.03	0.05	0.03	0.01	0.01	-0.01	-0.04	-0.09	0.02	-0.15	-0.06	0.03	-0.01
	education	0.01	0.02	-0.02	-0.03	0.06	0.15	0.06	-0.05	0	-0.02	0.02	0.07	0.04	0.09	0.07	0	0	-0.02	-0.07	-0.11	0.02	-0.18	-0.1	0.04	-0.04
0	professional	0.05	0.03	-0.02	-0.01	0.1	0.24	0.1		0.03	0.04	0	0.04	-0.01	0	0.07	0	-0.01	-0.03		-0.13	-0.03		-0.15	0	-0.03
Relationship	friendship	-0.03			0.01	-0.09	-0.15	-0.06		-0.02	0	-0.02		-0.02	-0.03	-0.06	-0.01	0	0.05	0.09	0.12	0.01	0.14	0.04	-0.03	
Relatic	romantic	-0.02		0.02	0.01	-0.06	-0.16	-0.06	0.04	-0.01	0	-0.02	-0.05	-0.03	-0.06	-0.06	0	-0.01	0.01	0.05	0.13	0	0.18	0.09	-0.02	0.03
ш	family	-0.01	-0.02	-0.01	0.02	-0.01	-0.08	-0.03	0.01	0.01	-0.01	0.01	-0.02	0.01	-0.01	-0.01	0.01	0.02	-0.02	0	0	0	0.01	0.11	0.01	0.02
	<u> </u>																									
	B r/careeradvice	0.07	0.06	-0.05	-0.03	0.25	0.5	0.19	-0.13	0.03	-0.01	0.04	0.11	0.03	0.09	0.17	0	-0.01	-0.1	-0.21	-0.29	-0.02	-0.39	-0.22	0.02	-0.1
	r/FriendshipAdvice	-0.07	-0.02	0	0.07	-0.17	-0.24	-0.09	0.12	0	-0.01	-0.03	-0.05	-0.03	-0.05	-0.14	-0.03	0.03	0.1	0.22	0.09	-0.01	0.18	0.11	-0.06	0.06
Subreddit	r/askwomenadvice	-0.02	0	0.04	-0.02	-0.12	-0.19	-0.08	0.06	-0.02	0.02	-0.03	-0.05	-0.04	-0.04	-0.05	0	-0.02	0.06	0.08	0.2	0.01	0.22	0.03	-0.04	0
Subr	r/AskMenAdvice	-0.03	0.01	0.05	-0.03	-0.13	-0.21	-0.08	0.07	-0.03	0.02	-0.05	-0.03	-0.03	-0.04	-0.08	-0.02	-0.03	0.07	0.09	0.23	0	0.27	0.03	-0.05	0.01
	r/Advice	0.01	0	-0.01	0.02	0.02	0.01	0.01	-0.02	0.02	0.01	0.02	0	0.01	0.01	0.02	0.02	0.01	-0.03	-0.04	-0.06	0	-0.08	0.01	0.02	0
	Study1	0.02	-0.04	-0.02	0	0.15	0.12	0.06	-0.11	-0.01	-0.02	0.05	0.03	0.06	0.03	0.08	0.04	0.01	-0.1	-0.13	-0.17	0.01	-0.19	0.03	0.11	0.02
ted																										
Day Posted	Weekday	0	0	0	0	0.01	0.02	0.01		0	0	0	0	0	0	0.01	0	0	0		-0.01	0	-0.02	-0.01	0	0
Day	Weekend	0	0	0	0	-0.01	-0.02	-0.01	0.01	0	0	0	0	0	0	-0.01	0	0	0	0.01	0.01	0	0.02	0.01	0	0
	Mar.19	-0.01	0.01	0.01	-0.01	0	0.02	0	0.01	0	-0.02	0	0.01	0	0.01	0	-0.01	0	0.01	0	0.01	0.01	0.01	-0.02	-0.02	-0.01
onth	Mar.20			-0.01	0.01	0	-0.02	0	-0.01	0	0.02	0	-0.01	0	-0.01	0	0.01	0	-0.01	0	-0.01	-0.01	-0.01	0.02	0.02	0.01
Covid Month		loss.	· 20.	,e	bi.	ç.	los.	· of	.or	S	los.	S	17.	No.	-N	c@	.6	lor	los.	· ^1	رق	-N	-N	los:	M.	M
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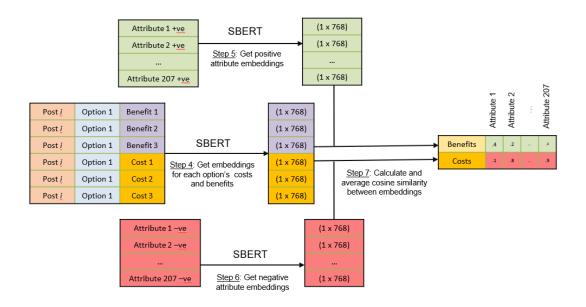
Study 2 (GPT): 50 online participants judged GPT outputs of 100 randomly sampled posts as appropriate or inappropriate



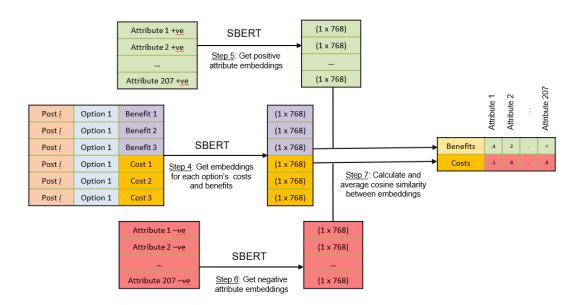
Study 2 (GPT): 50 online participants judged GPT outputs of 100 randomly sampled posts as appropriate or inappropriate



Study 3 (SBERT): 100 online participants judged the similarity of GPT-generated reasons to the 207 attributes

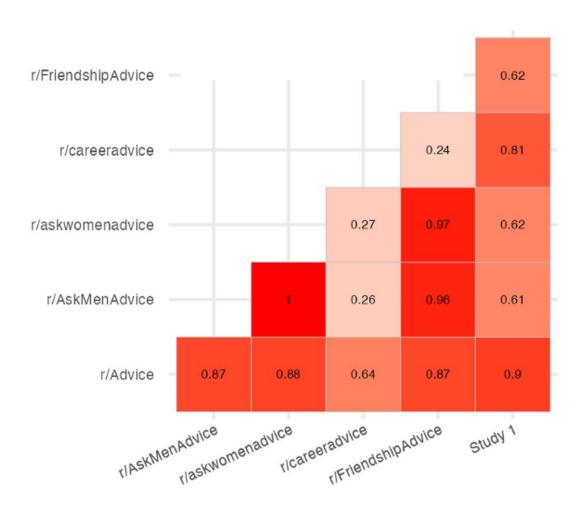


Study 3 (SBERT): 100 online participants judged the similarity of GPT-generated reasons to the 207 attributes



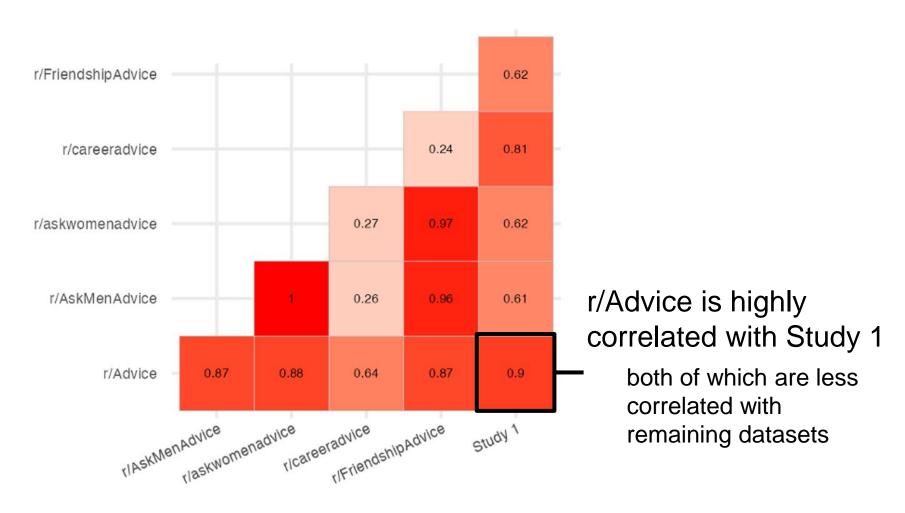
Accuracy = 98.53%

Representativeness of r/Advice



Attribute Frequency Correlations

Representativeness of r/Advice



Attribute Frequency Correlations

Theory-based Attributes

Attribute Type	#	Example Attribute	Example Positive Sentence					
decision theory	5	safety vs. risk	prevents risk					
decision outcomes	11	money	increases wealth					
consumer behavior	6	experiential consumption	produces pleasant memories					
emotions	6	anger	defuses hostility					
self-determination	3	social relatedness	fosters a sense of belonging					
values	10	tradition	encourages preservation of cultural heritage and customs					
goals	135	sexual desirability	enhances romantic appeal					
moral foundations	5	harm	helps someone weak or vulnerable					
person perception	10	competence	involves being competent					
SVO	4	competitiveness	enhances personal status					
altruism	9	efficiency	maximizes the use of available resources					
fairness	3	procedural fairness	advances fair and inclusive decision making					

Total 207 distinct attributes

Post i	Option 1	Benefit 1		(1 x 768)
Post i	Option 1	Benefit 2		(1 x 768)
Post i	Option 1	Benefit 3	SBERT	(1 x 768)
Post i	Option 1	Cost 1	Step 4: Get embeddings	(1 x 768)
Post i	Option 1	Cost 2	for each option's costs and benefits	(1 x 768)
Post i	Option 1	Cost 3		(1 x 768)



Post i	Option 1	Benefit 1		(1 x 768)
Post i	Option 1	Benefit 2		(1 x 768)
Post i	Option 1	Benefit 3	SBERT	(1 x 768)
Post i	Option 1	Cost 1	Step 4: Get embeddings	(1 x 768)
Post i	Option 1	Cost 2	for each option's costs and benefits	(1 x 768)
Post i	Option 1	Cost 3		(1 x 768)

