A Test of Dynamic Consistency and Consequentialism In the Presence of Ambiguity

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August 2019

People Places Things

Plan

This is an experimental paper which studies decision-making when uncertainty is resolved over time.

1. Introduction
2. Dynamic Consistency and Consequentialism
3. Ambiguity and Dynamic Consistency
4. The Experiment
5. Results
6. Conclusion

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  - Myopic choice,
  - or Consistent planning.

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- (Subjective) Expected Utility satisfies both conditions.

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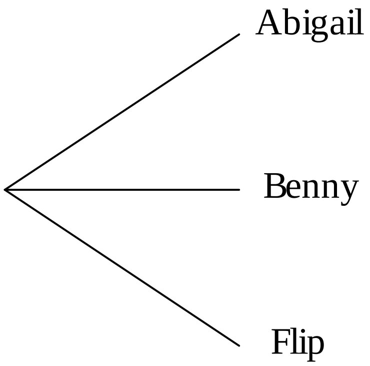
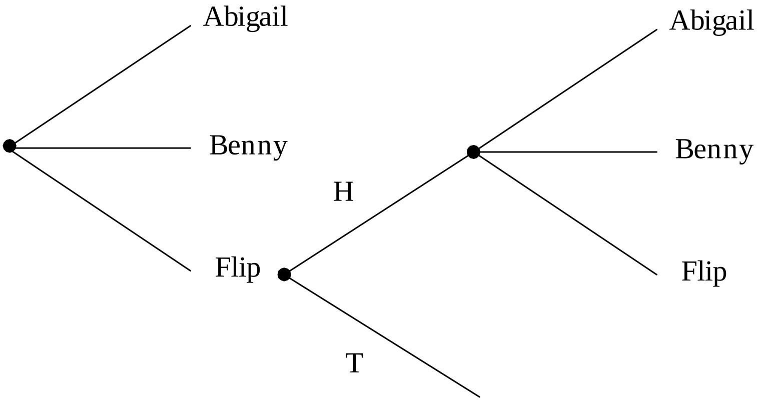
  - Flip a coin.
- The loser however may demand that the coin is flipped again.
- Should she agree to this request?

Mom's problem



The request for a second flip



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- Dynamic consistency requires that Mom give the treat to Abigail.
- In particular she should reject requests for a second flip of the coin.

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- She flips the coin and it lands heads.
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- According to consequentialism, the fact that she has already flipped the coin once is not relevant.

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- DC *not* restrictive if we do not require consequentialism.
- But non-consequentialist preferences will depend on past decisions.
- Our preferred option is consistent planning. Agents take into account that future preferences may be different when making their initial decisions.

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	c	x	x	x
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- If DM *anticipates* she will prefer s in period 1 when told the signal's realization is G , then may decide to choose c at $t = 0$.

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- Halfway through the season it was clear that Leicester were doing much better than expected.
- A good signal was received.
- Many fans cashed out, i.e. sold their bets back to the bookmaker.

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- The implementers guaranteed transparent and fair implementation of randomizations during the experiment.

Decision Situations 1a and 1b

	Red	Blue	Yellow
Frequency	33	N	$67 - N$

Composition of Bag 1

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Note this is slightly different to the standard Ellsberg problem since there is a (probability) penalty for choosing the unambiguous option.

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Table: Composition of Bag 1

Decision 1a	**Decision 1b**	**Ambiguity Attitude**	157 subjects
R	BY	*Averse*	32.5%
B	RY	*Seeking*	7.6%
Y	RB		
B	BY	*Neutral*	42%
Y	BY		
R	RY	*Mixed*	17.8%

Decision Situations 2a

	RED	BLUE	YELLOW
Odd	33	M	$67 - M$
Even	33	M	$67 - M$

Table: Composition of Bag 2

Decision 2a: Specify colour to bet on for both *odd* and *even*-numbered cards.

Note $M \neq N$.

- Unambiguous options:

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- Ambiguous options bet on blue or yellow.

Decision Situation 2b

	RED	BLUE	YELLOW
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Even	33	M	$67 - M$

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Decision 2b: Specify colour to bet on for the *even*-numbered cards.

- Now assume the experimenter announces whether the card is odd or even but not its colour.

Decision Situation 2b

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Decision 2b: Specify colour to bet on for the *even*-numbered cards.

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- Do subjects switch to red?

Decision Situation 2b

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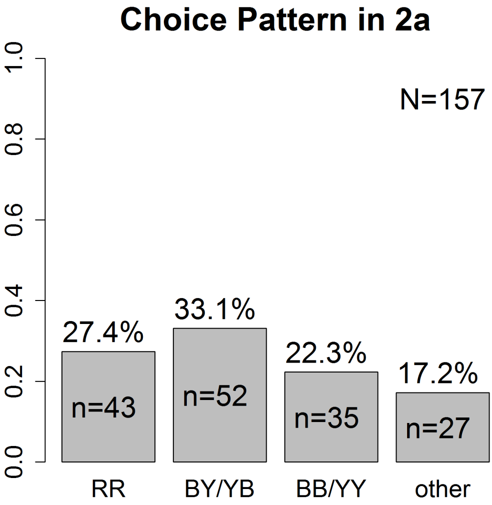
Decision 2b: Specify colour to bet on for the *odd*-numbered cards.

Choice Pattern in Decision Situation 2a



Choice Pattern in 2a by Ambiguity Attitude

	RR	*BY / YB*	*BB / YY*	*other*	Total
Averse	19	22	3	7	51
Seeking	5	3	2	2	12
Neutral	7	20	28	11	66
Mixed	12	7	2	7	28
Total	43	52	35	27	157

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1a and 2b: Test of Consequentialism

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2a and 2b: Test of Dynamic Consistency

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This illustrates that an ambiguity averse individual cannot satisfy both dynamic consistency and consequentialism.

Choice Pattern in 1a and 2b

		2b		
		R	B	Y
1a	R	**57**	13	9
	B	11	**25**	**8**
	Y	9	**9**	**16**

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- Individuals on the diagonal satisfy consequentialism.

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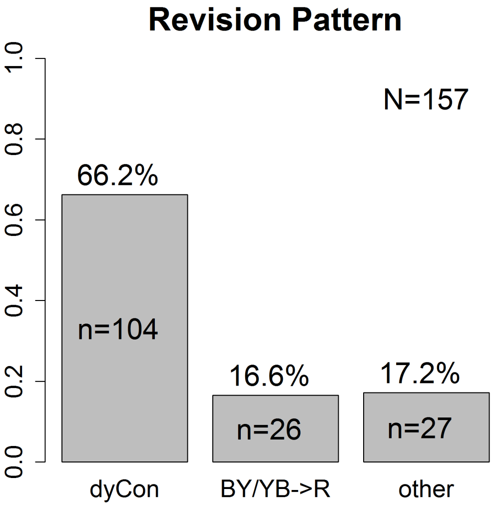
- Individuals on the diagonal satisfy consequentialism.
- Those choosing B or Y may be indifferent.

Choice Revision from 2a to 2b



Revision Pattern by Ambiguity Attitude

	$BY\,/\,YB \rightarrow R$	rest
Averse	17	34
Seeking	1	11
Neutral	2	64
Mixed	6	22

Dynamic Consistency

	DC	*Not* DC
RR	38	5
BY / *YB*	15	37
BB / *YY*	31	4
other	20	7

Table: Dynamic Consistency by choice pattern in 2a

Dynamic Consistency by Ambiguity Attitude

	DC	*Not* DC
Averse	27	24
Seeking	9	3
Neutral	52	14
Mixed	16	12

Consequentialism by Ambiguity Attitude

	Conseq	*Not* Conseq
Averse	38	13
Seeking	6	6
Neutral	52	14
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Summary of Findings

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Julian Jamison (Exeter) has shown future selves are processed in the same part of the brain as opponents in a game.

THANK YOU