The construction of consistent interpretations in decision making

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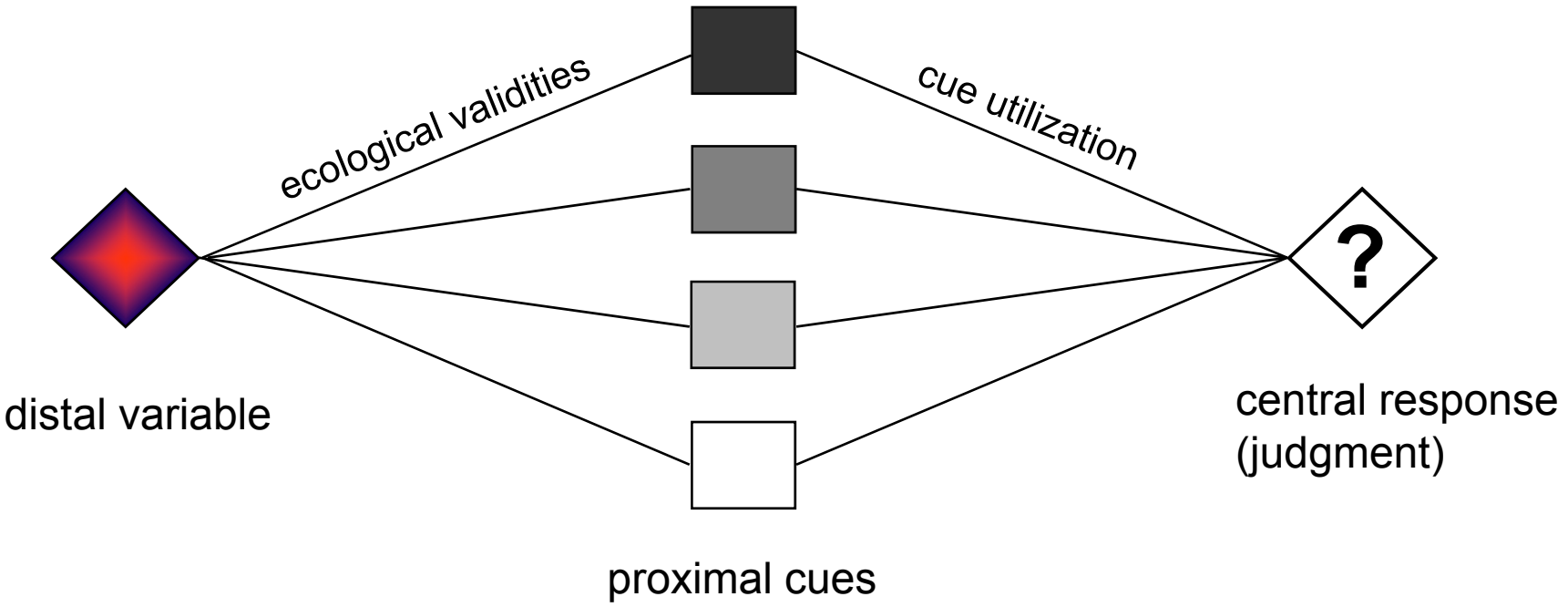
?

	John McCain	Barack Obama
Expert	-	+
Survey	+	-
Average	-	+
Election market	-	+

Brunswiks lens model



adapted from Brunswik (1955)

	John McCain	Barack Obama
Expert	-	+
Survey	+	-
Average	-	+
Election market	-	+

Festinger (1957)

"Dissonance has been shown to be an inevitable consequence of a decision." (p. 47)

DECISION

Two alternatives, both having positive and negative aspects

↓

INCONSISTENCIES

Rejecting positive aspects (nonchosen option)

Accepting negative aspects (chosen option)

↓

DISSONANCE

Pressure to reduce dissonance,

for instance by changing cognitions about the alternatives

Simon, Snow & Read (2004):
Coherence shifts

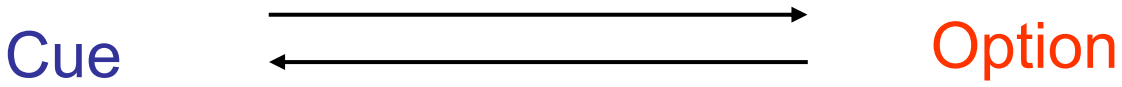
- "*Coherent* representations are ones in which elements that are positively related to one another tend to wax and wane together." (p. 816)

- Spreading apart of alternatives

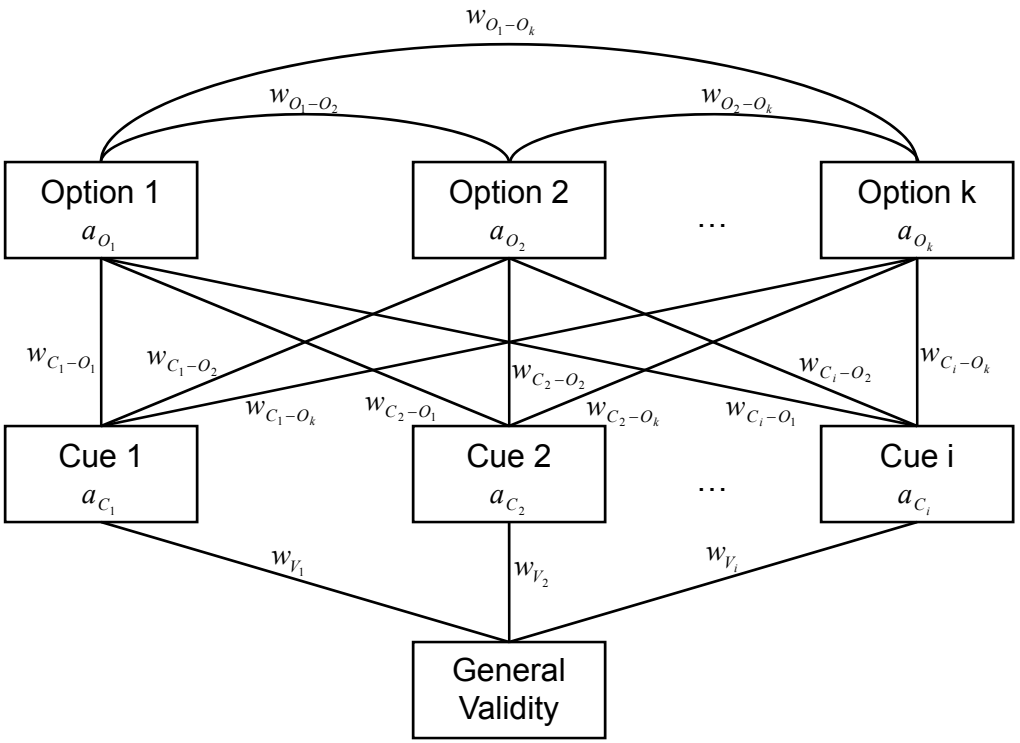
Glöckner, Betsch & Schindler (under review):

	City A	City B
State capital	+	-
airport	-	+
university	-	+

- Coherence shifts in probabilistic inference tasks
- Bidirectional links between cues and options

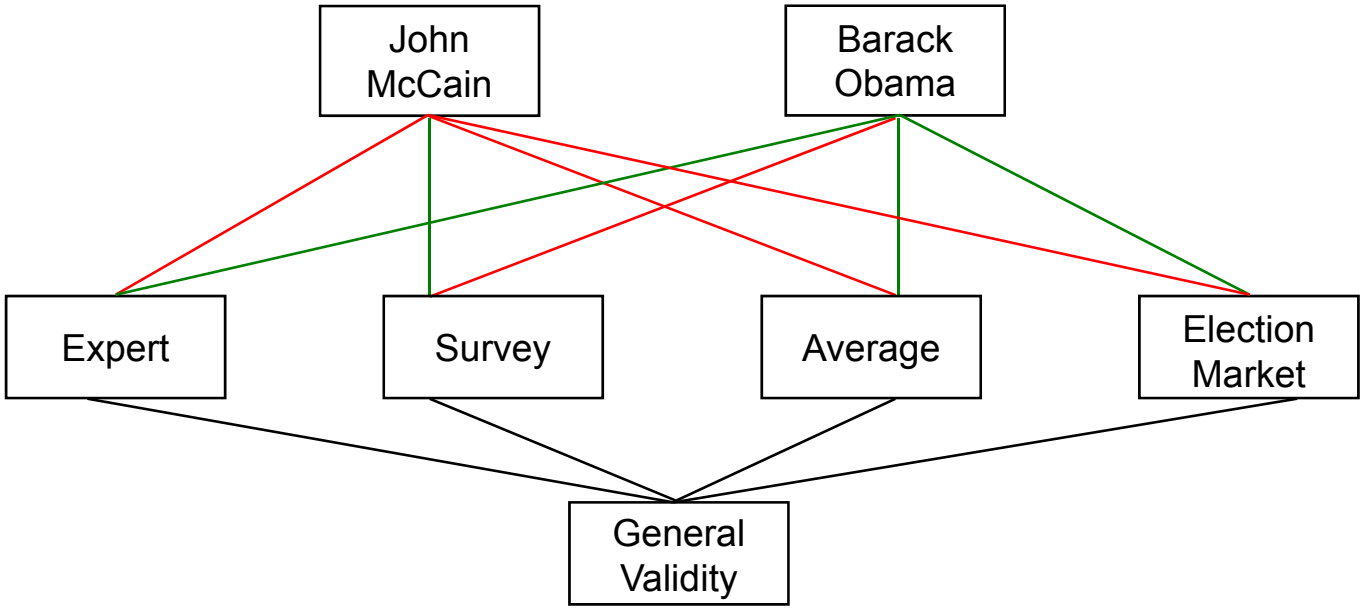


Parallel constraint satisfaction network: *general*

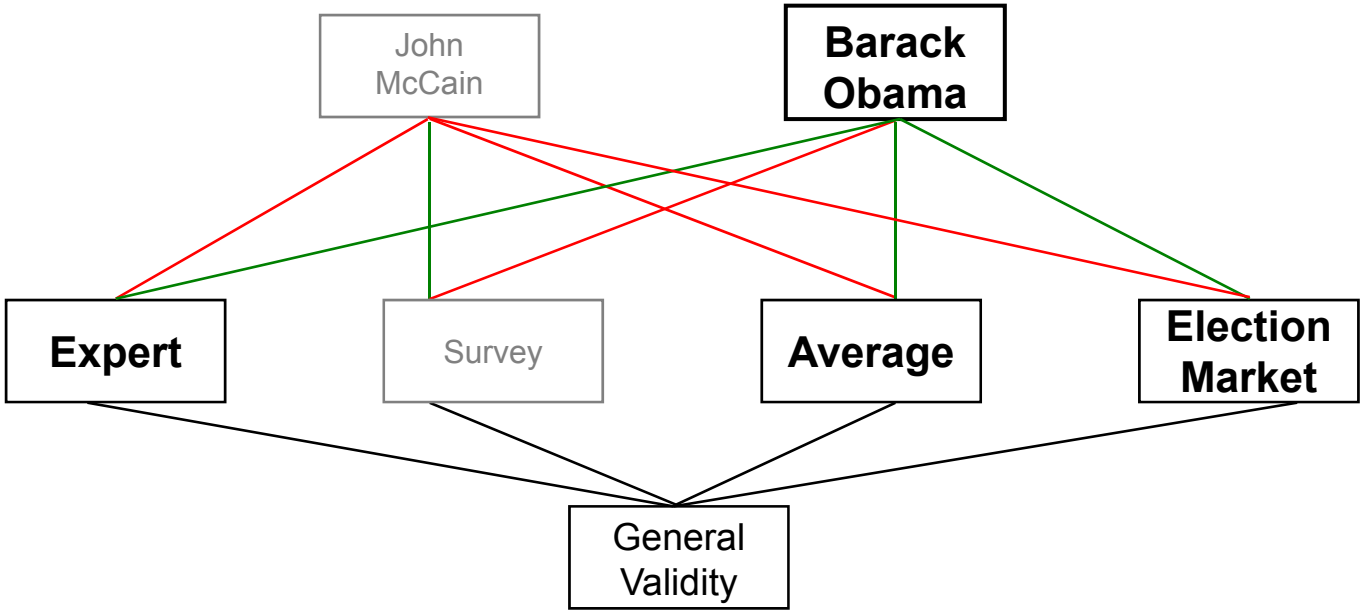


from Glöckner & Betsch (2008)

Parallel constraint satisfaction model: *John McCain or Barack Obama?*



Parallel constraint satisfaction model: *John McCain or Barack Obama?*



Which factors have an influence on the predecisional revaluation of alternatives?

	Car A	Car B
Low price	✗	✓
High economy	✓	✗
High power	✗	✓
Looks	✗	✓

Low dissonance

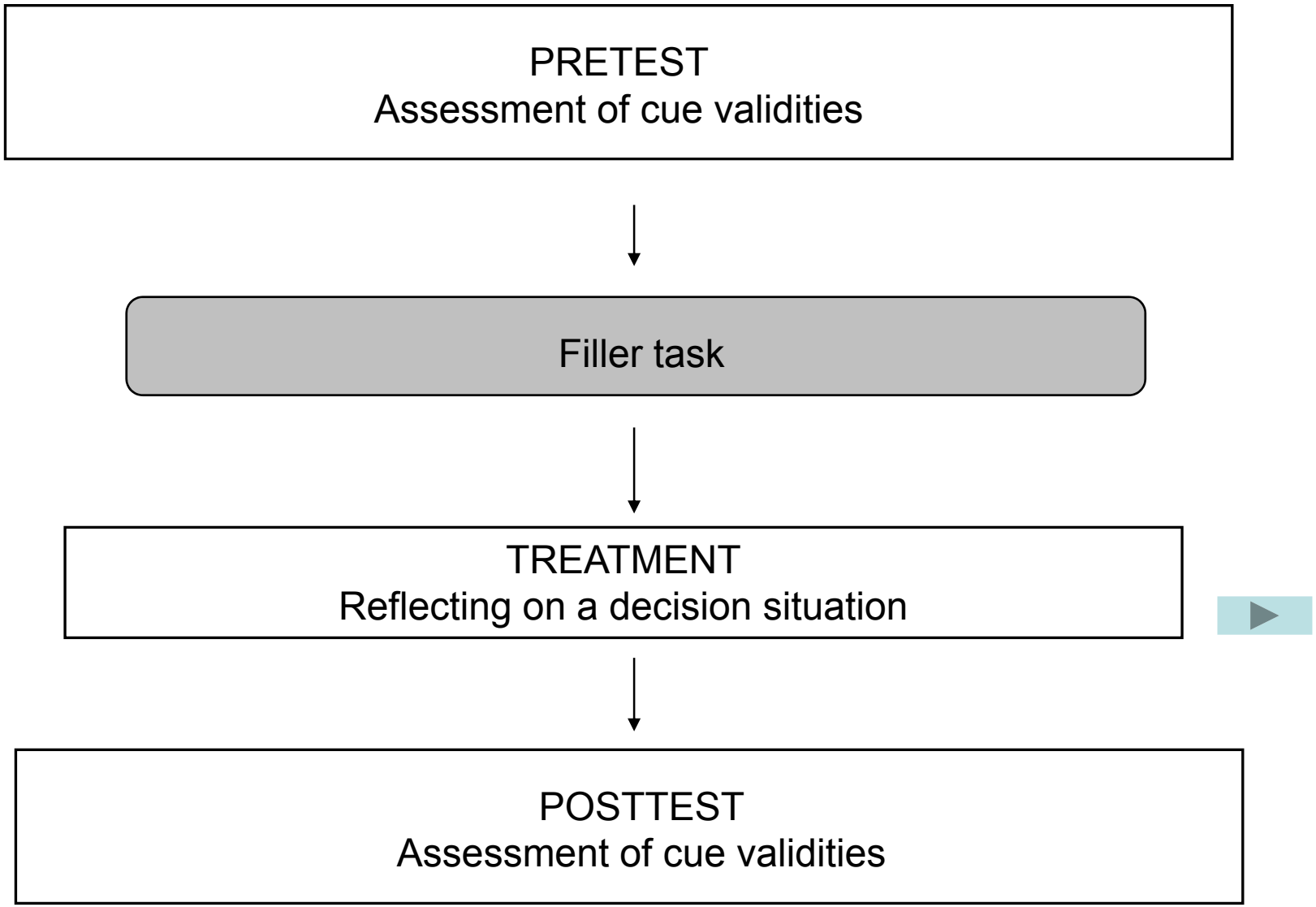
	Car A	Car B
Low price	✓	✗
High economy	✓	✗
High power	✗	✓
Looks	✗	✓

High dissonance

Research questions:

- Does the relation between dissonant and consonant elements influence the strength of predecisional revaluation?

- Does this revaluation depend on the number of dissonant and consonant elements?


PRETEST
Assessment of cue validities
Filler task
TREATMENT
Reflecting on a decision situation
POSTTEST
Assessment of cue validities

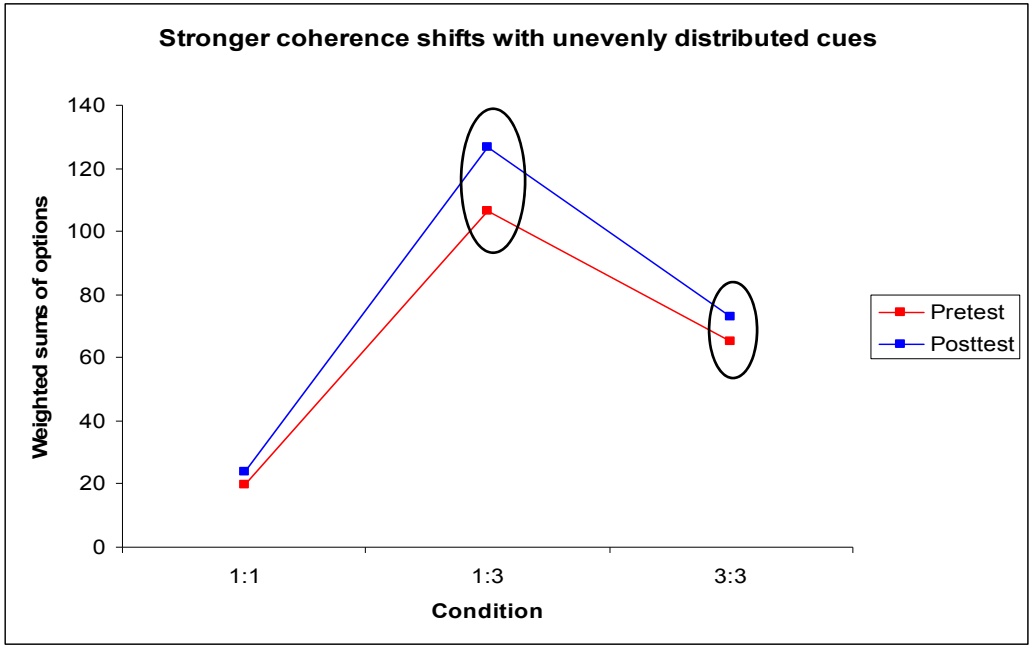
Data analysis I

- Weighted sums for each option
- Difference between the weighted sums (pretest and posttest)
- 2 (TIME) x 3 (CUE PATTERN) repeated measurement ANOVA
- Main effect TIME: $F(1,110) = 17.697$ ($p < .01$)

Averaged across cue patterns
a spreading apart of alternatives occurs.

Data analysis II

- Interaction TIME x CUE PATTERN: $F(2,110) = 3.779$, $p < .05$



Results of paired t-tests:

- 1 vs. 3: $t(38) = 3.632$, $p < .01$, $d = .582$
- 3 vs. 3: $t(37) = 1.774$, $p < .05$, $d = .288$
- 1 vs. 1: $t(35) = 1.681$, n.s.

Results of the first experiment

- Equal vs. unequal distribution of cues:

  An unequal distribution of cues (1:3) leads to stronger coherence shifts

- 1:1 vs. 3:3 cue pattern:

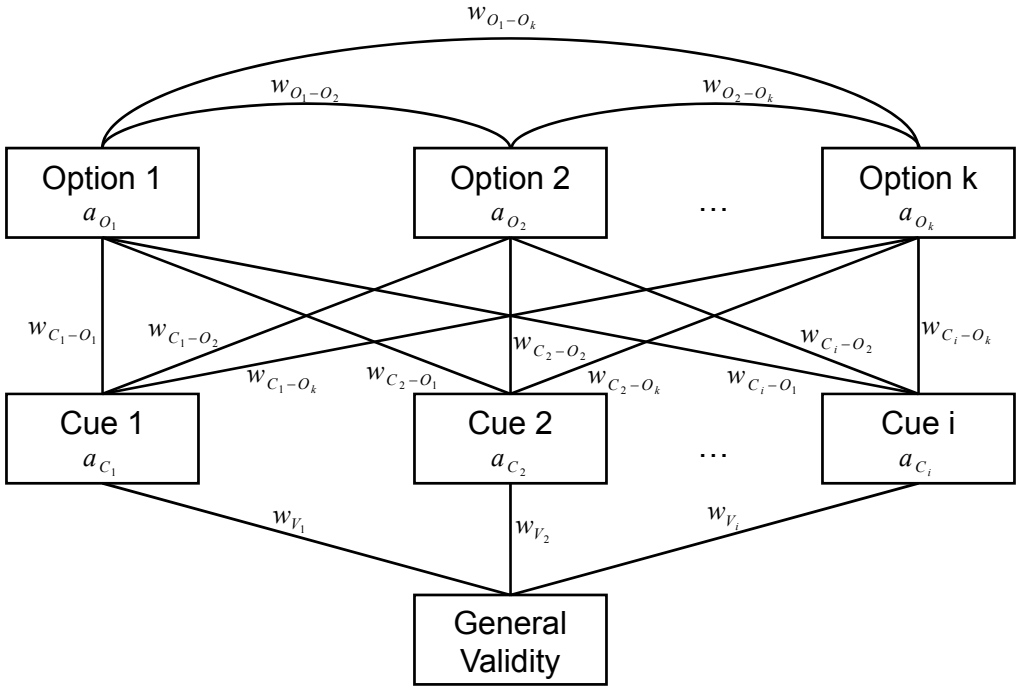
  The higher the number of cues presented, the stronger the coherence shifts

Crucial for the strength of coherence shifts is the conflict induced by the number and distribution of cues.

Explanation by parallel constraint satisfaction processes?

⟶ simulation study

- Comparison of empirically used cue patterns
- Based on the parallel constraint satisfaction model of Glöckner & Betsch (2008)

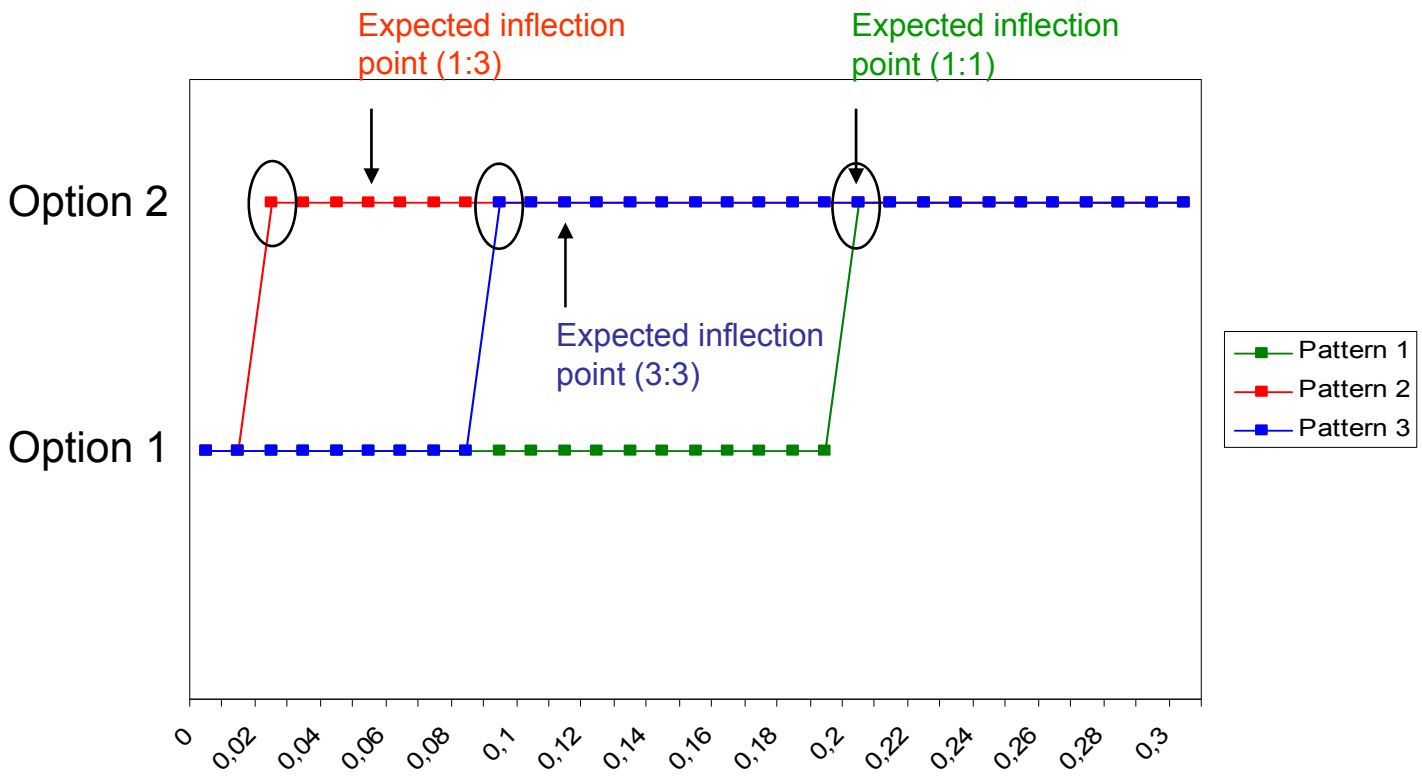


- Initial validity of one cue was manipulated (.00 - .50)
- The other validities were held constant
- **Initially**, the weighted sums spoke in favour of option 1

	Initial validity	Option 1	Option 2
Cue 1	.00 - .50	-	+
Cue 2	.20	+	-
Cue 3	.10	-	+
Cue 4	.05	-	+

- At which point do the choices switch from option 1 to option 2?
- Depending on the strength of coherence shifts, this inflection point is earlier than expected

Inflection point of choices:



Summing up

- Experimental results show that the strength of coherence shifts depends on the distribution and number of cues:
  - The revaluation was strongest in the 1:3 cue pattern, followed by the 3:3 cue pattern
  - The revaluation in the 1:1 cue pattern was in the expected direction, but not significant
- These results are corroborated by the simulation study

The strength of consistency maximizing depends on the disorganization or conflict induced by the cue pattern!

Thank you

for your attention!

Cue pattern in condition 1 (1:1)

	Holiday destination A	Holiday destination B
ZDF	-	+
Wetteronline.de	+	-

Cue pattern in condition 2 (1:3)

	Holiday destination A	Holiday destination B
Wetteronline.de	-	+
Sat.1	+	-
Bild	-	+
ZDF	-	+

Cue pattern in condition 3 (3:3)

	Holiday destination A	Holiday destination B
Süddeutsche	+	-
ZDF	+	-
Bild	-	+
N24.de	-	+
Sat.1	-	+
Wetteronline.de	+	-

Cue pattern 1 (1:1)

	Initial validity	O 1	O 2
Cue 1	.00 - .50	-	+
Cue 2	.20	+	-
Cue 3	.00		
Cue 4	.00		
Cue 5	.00		
Cue 6	.00		

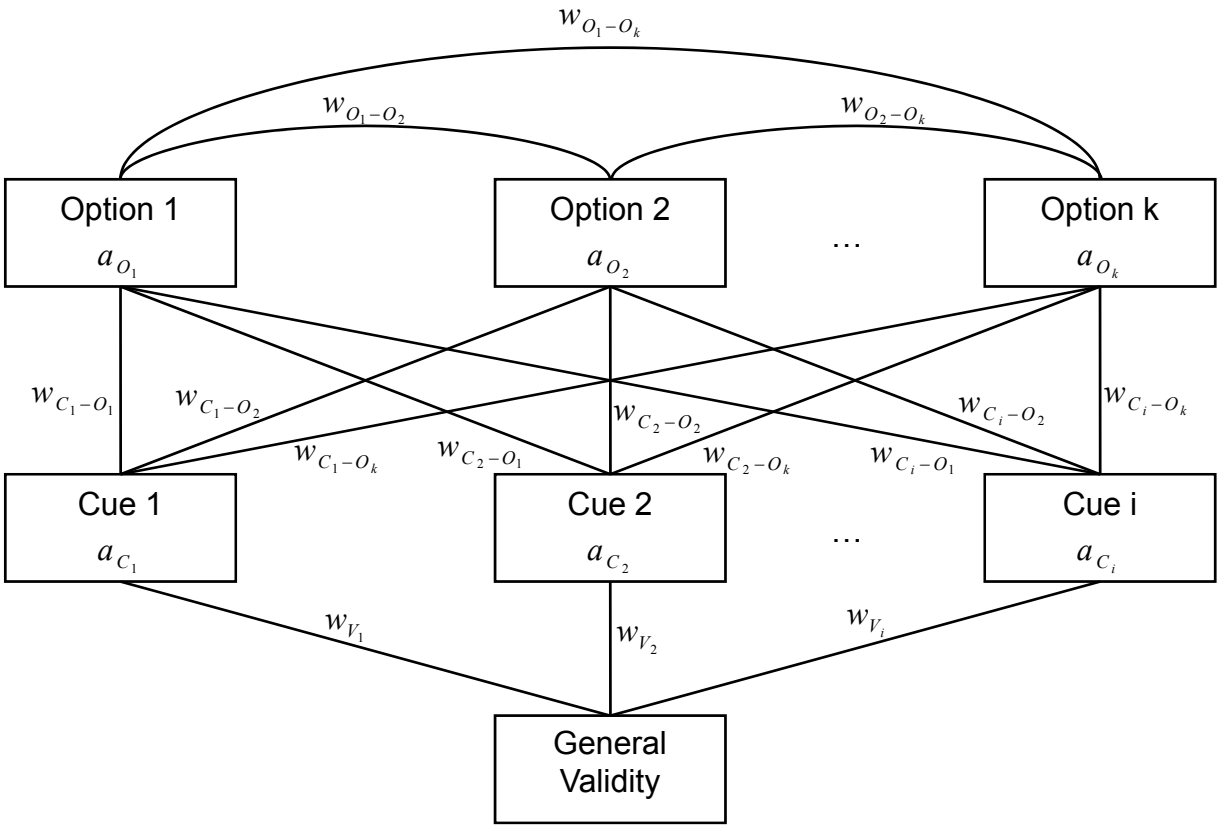
Cue pattern 2 (1:3)

	Initial validity	O 1	O 2
Cue 1	.00 - .50	-	+
Cue 2	.20	+	-
Cue 3	.10	-	+
Cue 4	.05	-	+
Cue 5	.00		
Cue 6	.00		

Cue pattern 3 (3:3)

	Initial validity	O 1	O 2
Cue 1	.00 - .50	-	+
Cue 2	.10	-	+
Cue 3	.20	+	-
Cue 4	.05	+	-
Cue 5	.01	+	-
Cue 6	.05	-	+

Parallel constraint satisfaction network (Glöckner & Betsch, 2008)



Iterative updating algorithm

(McClelland & Rumelhart, 1981; Read & Miller, 1998; Glöckner, Betsch & Schindler, under review)

$$netinput_i(t) = \sum_{j=1 \to n} w_{ij} * a_j(t)$$

If $input_i < 0$

$$a_i(t+1) = a_i(t) * (1 - decay) + netinput_i * \left(a_i(t) - activation\min\right)$$

If $input_i \geq 0$

$$a_i(t+1) = a_i(t) * (1 - decay) + netinput_i * \left(activation\max - a_i(t)\right)$$