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A process perspective on the multiple dimensions of negotiations

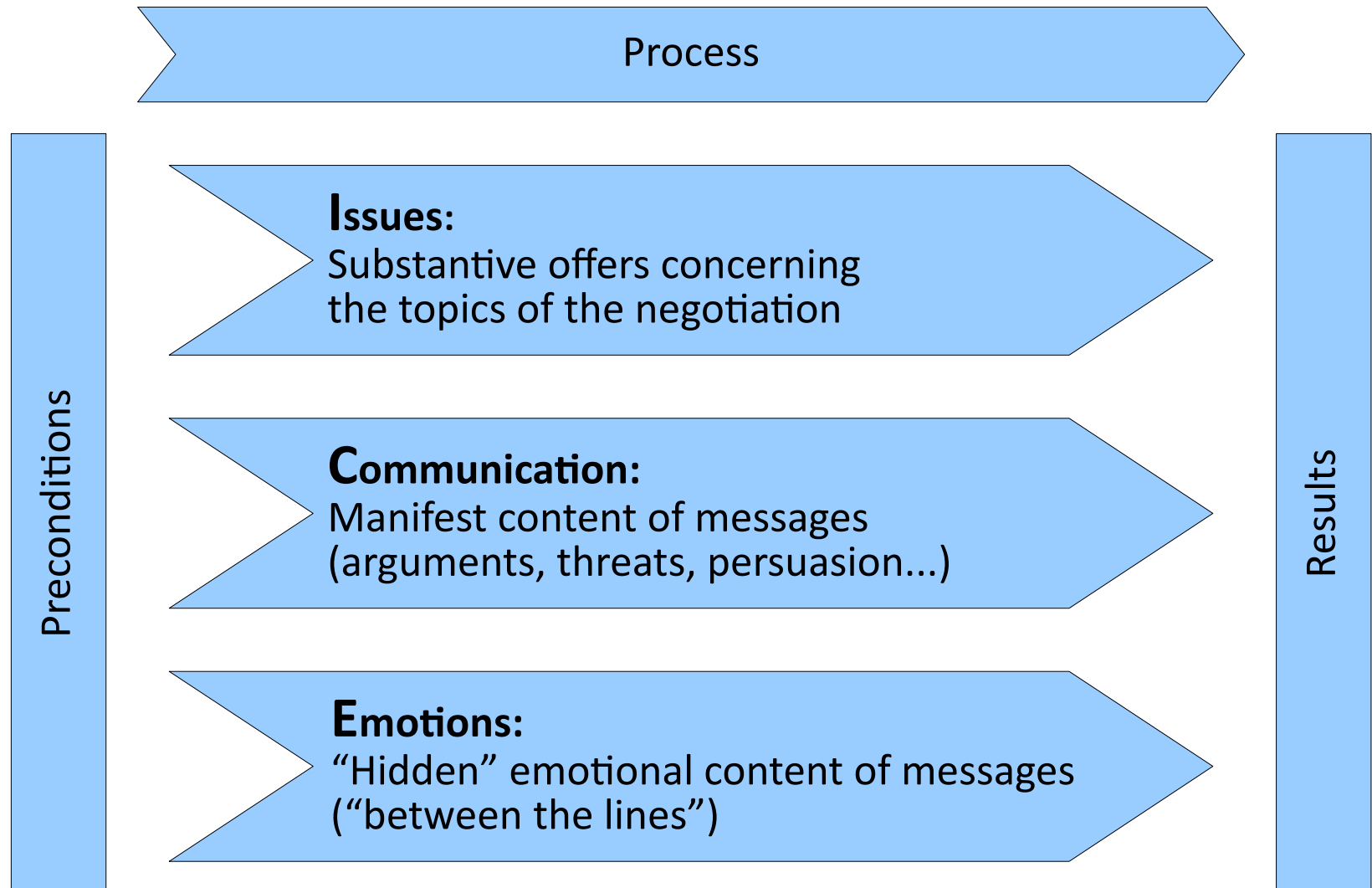
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May 12, 2017



- Dimensions of the negotiation process
- A process perspective: Levels of granularity
- Measurement of dimensions
- Interactions between dimensions: Some empirical results
- Summary and conclusions

Dimensions of negotiation processes: The ICE framework



Substantive:

- Theoretical dynamic bargaining models (Rubinstein, Zeuthen/Hicks)
 - Abstract, game-theoretic models
 - Little empirical evidence, mostly in highly abstract experiments
- Empirical research on concessions
 - Richer settings
 - But only either total concessions or particular steps (e.g., first concessions)
- More recently: Concession patterns for automatic negotiation agents
 - Prescriptive models
 - Often based on time
 - Evidence mostly from tournaments between agents

Communication:

- Phase models:
 - Theoretical foundation
 - Empirically verified
 - Many different, but similar schemes
 - Broad structure (3-4 phases)
- Classification schemes (content analysis)
 - Good understanding and classification of contents
 - Only phase level
- Only few models at more detailed level
 - Reciprocity
 - Turns, critical events

Dimensions: State of Research

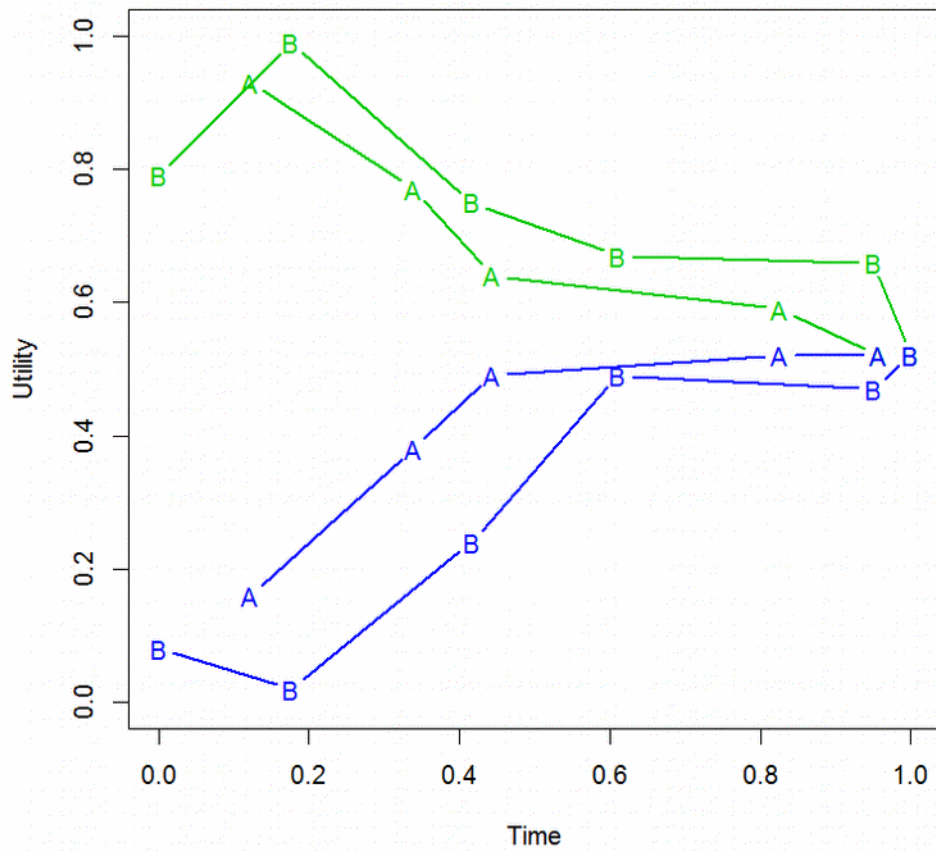
Emotions:

- Only a recent topic
- Difficulties in measuring/classifying emotions
- Mostly static (entire negotiations)

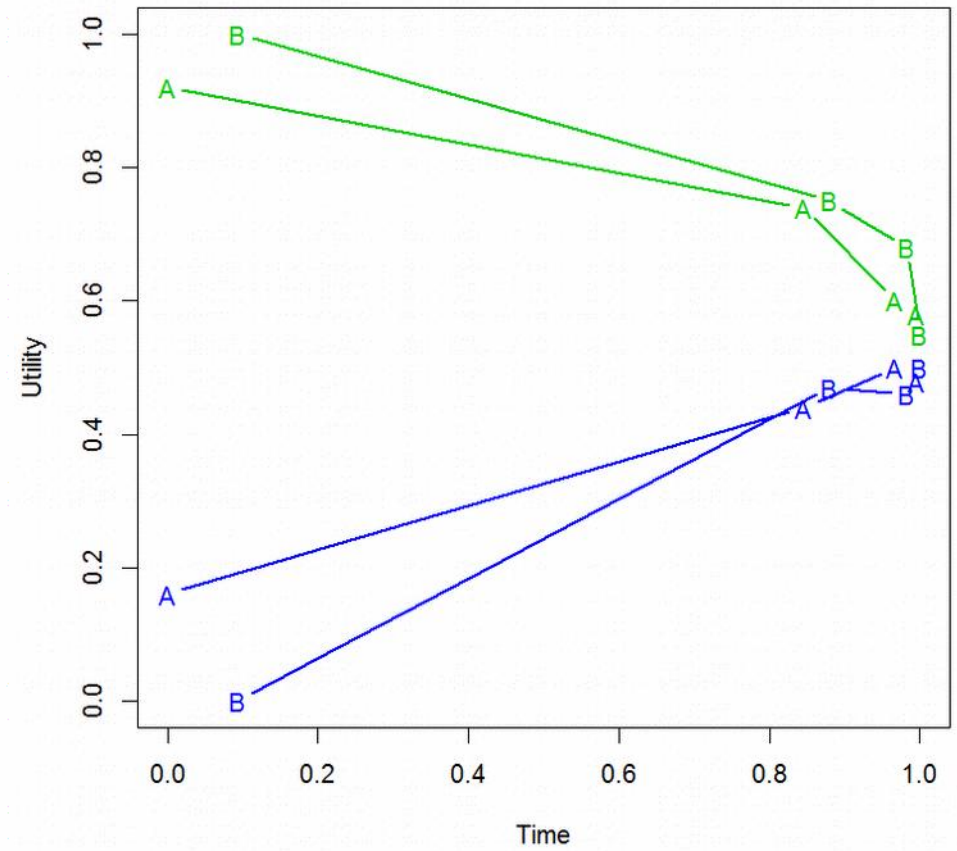
- Model should be **flexible** to accommodate
 - different processes
 - different goals of analysis
- Processes should be made **comparable**
 - for aggregation
 - and statistical analysis

Need for flexibility

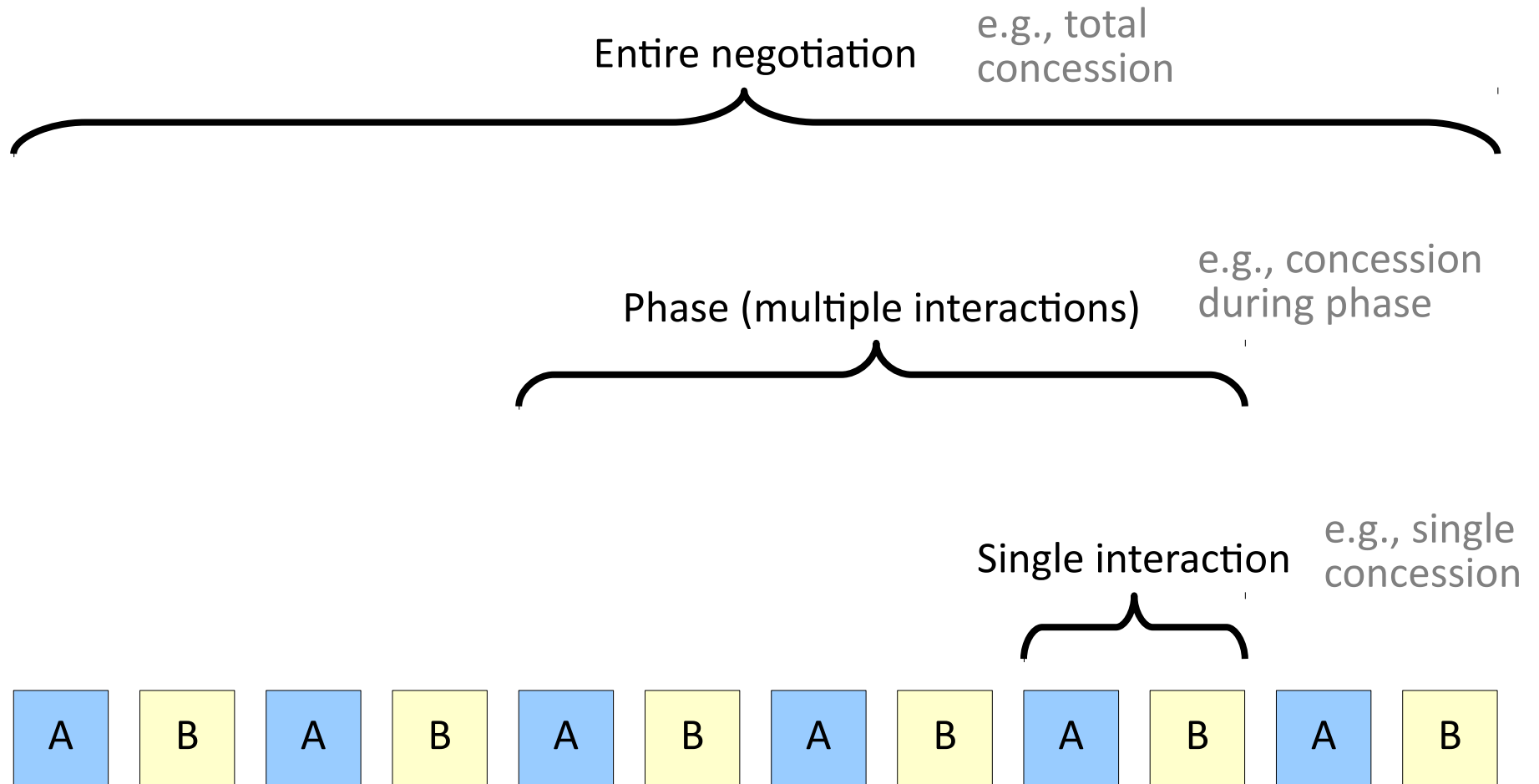
Experiment nr 13



Experiment nr 14

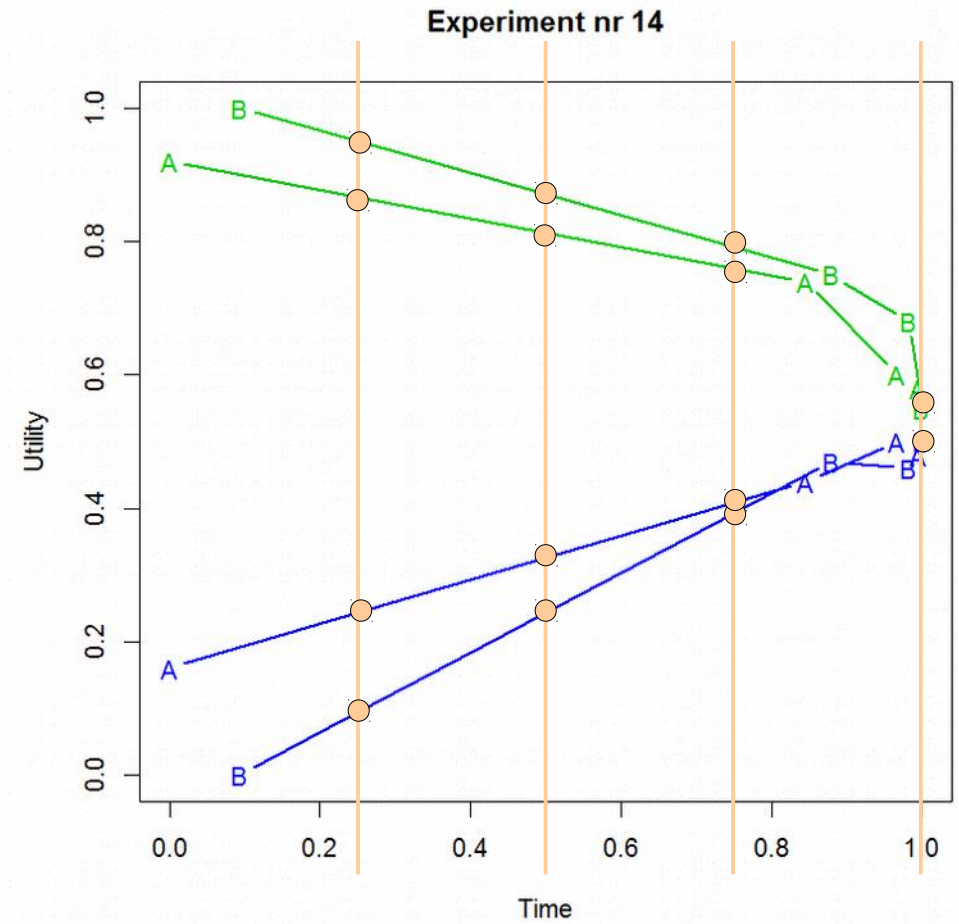
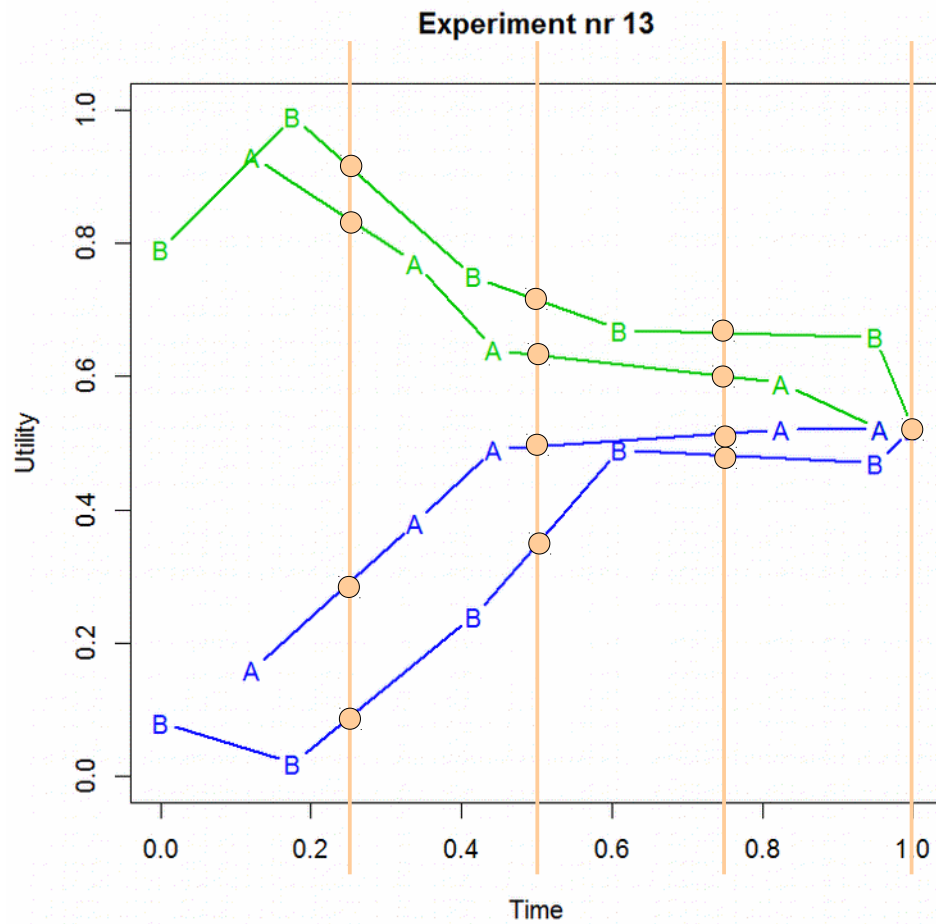


Dynamics: Levels of analysis



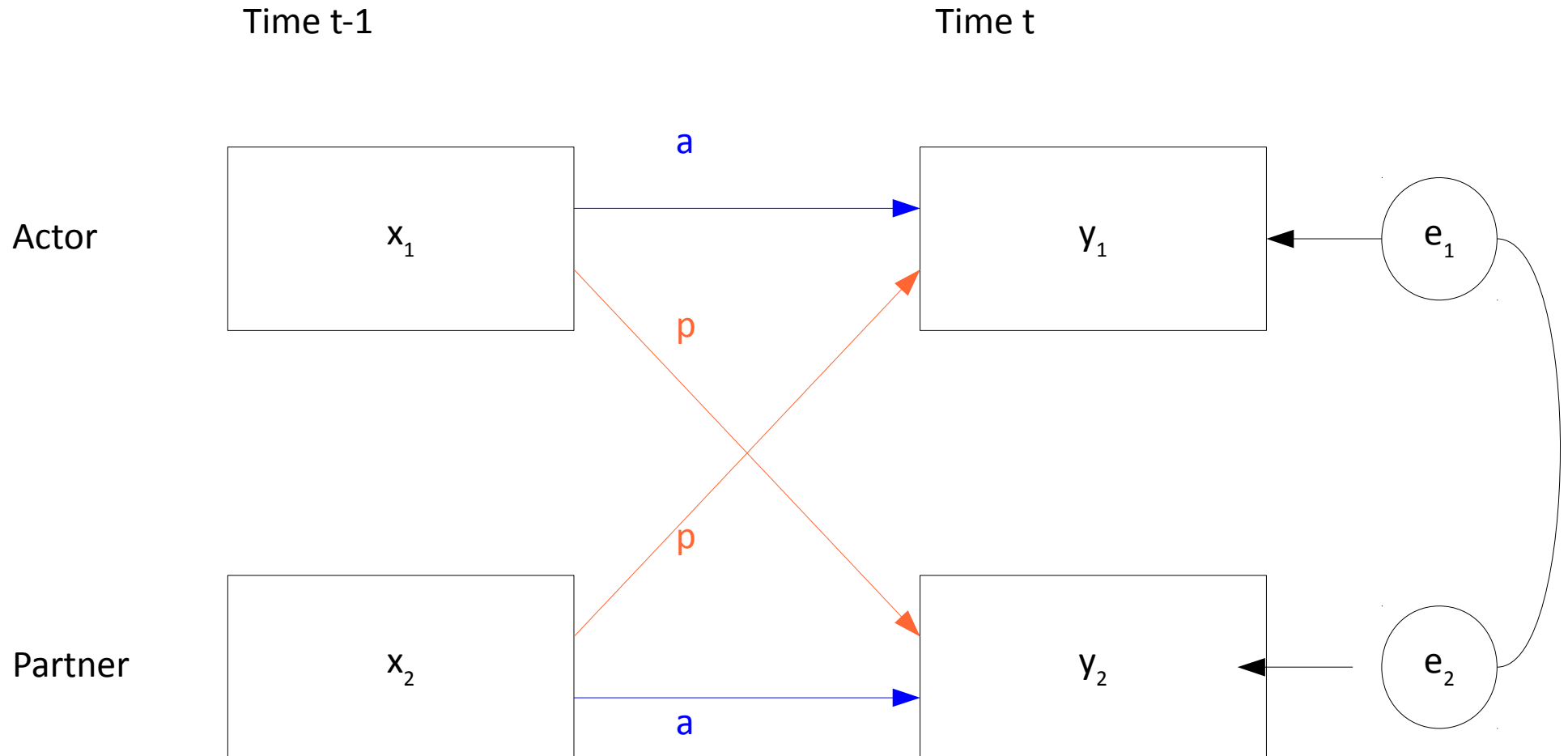
- Stage models:
 - Predefined sequence of stages
 - Often equal/arbitrary length
 - Behavior within phase heterogeneous
- Episodic models:
 - “Turning points” between phases
 - Sequence of phases might vary between negotiations
 - Homogeneous behavior within each phase

Phase level: Standardized interpolated negotiation processes



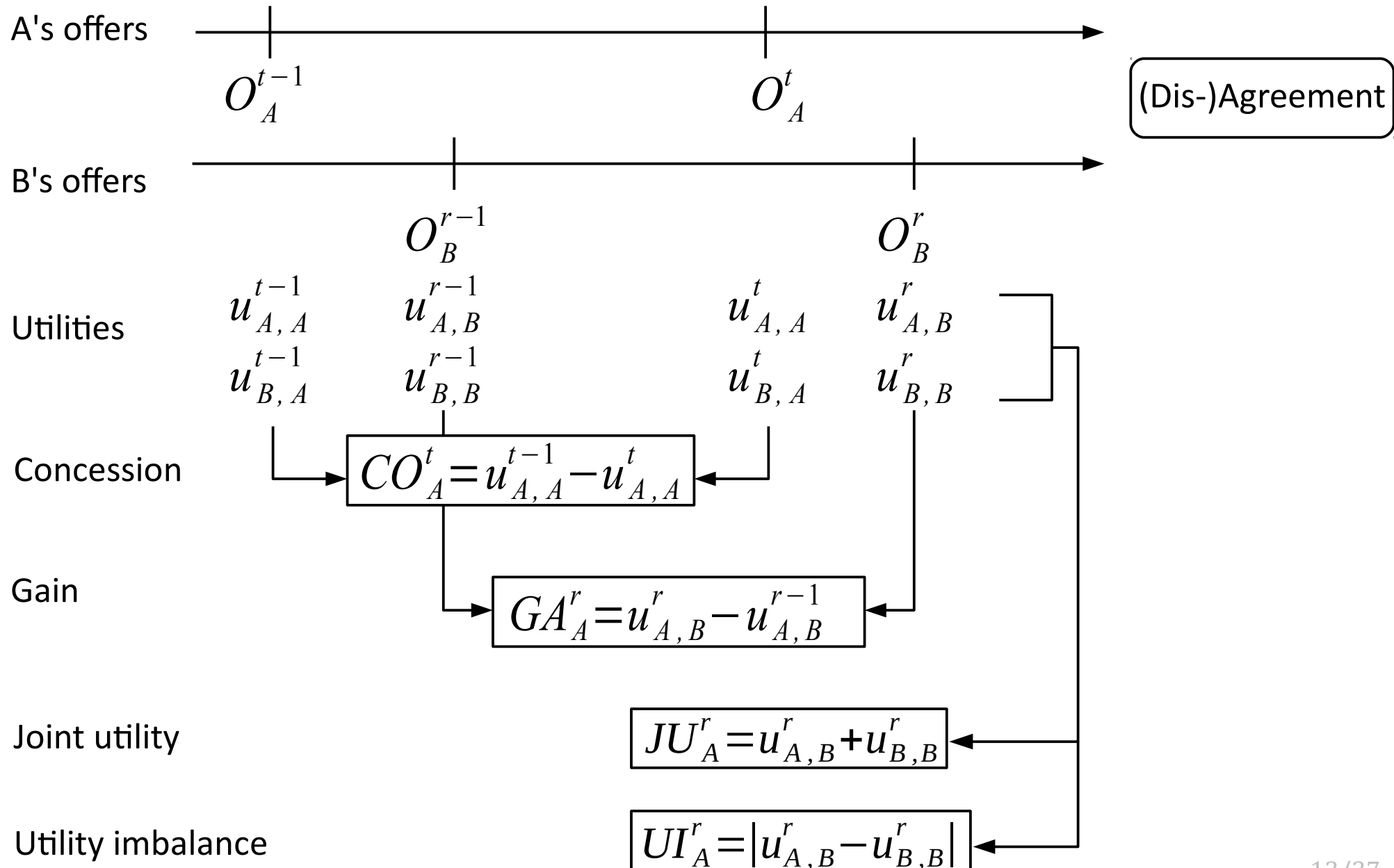
Interaction level: APIM

Actor – Partner Interdependence Model





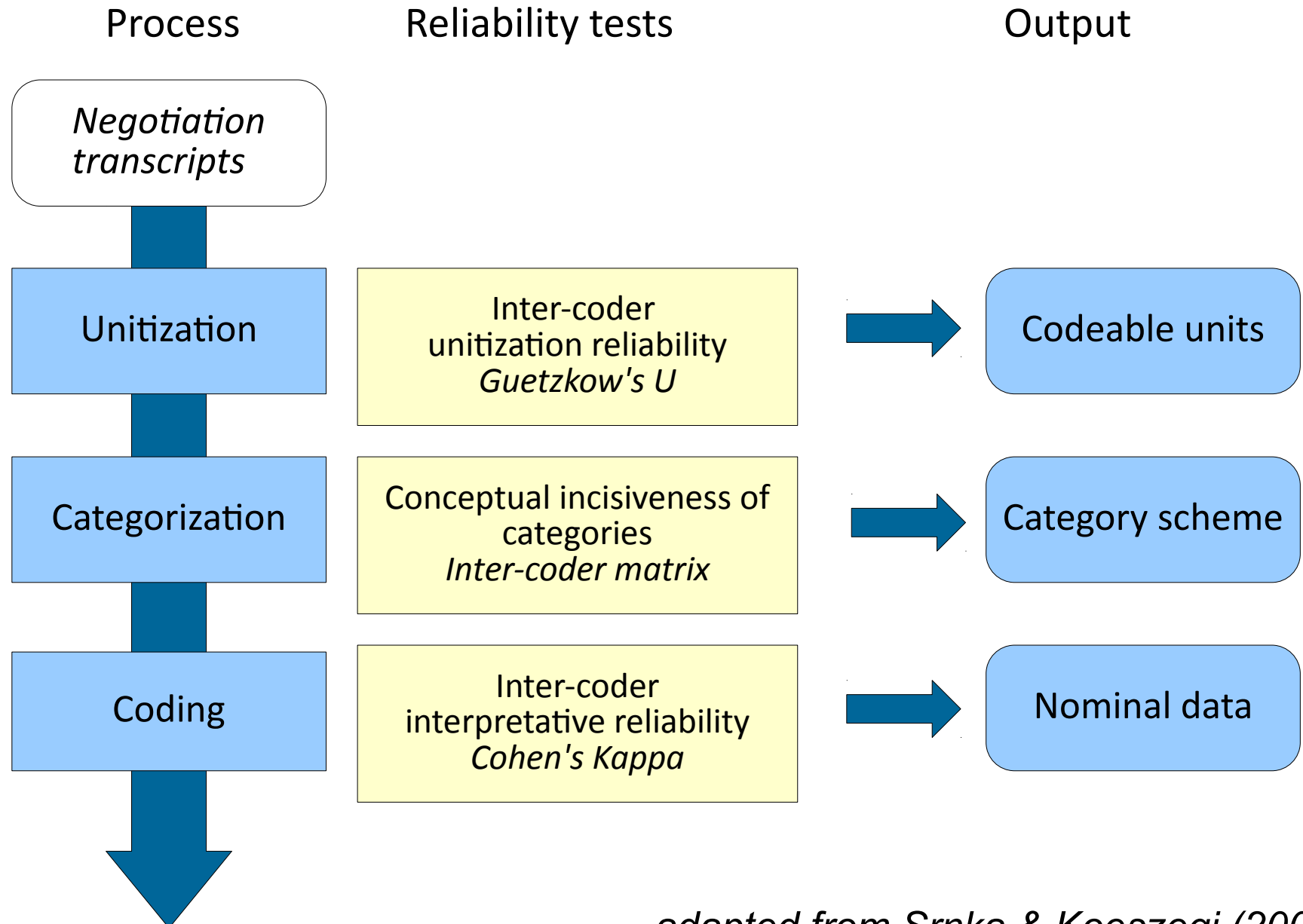
Measurement: Substantive level



Measurement: Communication types

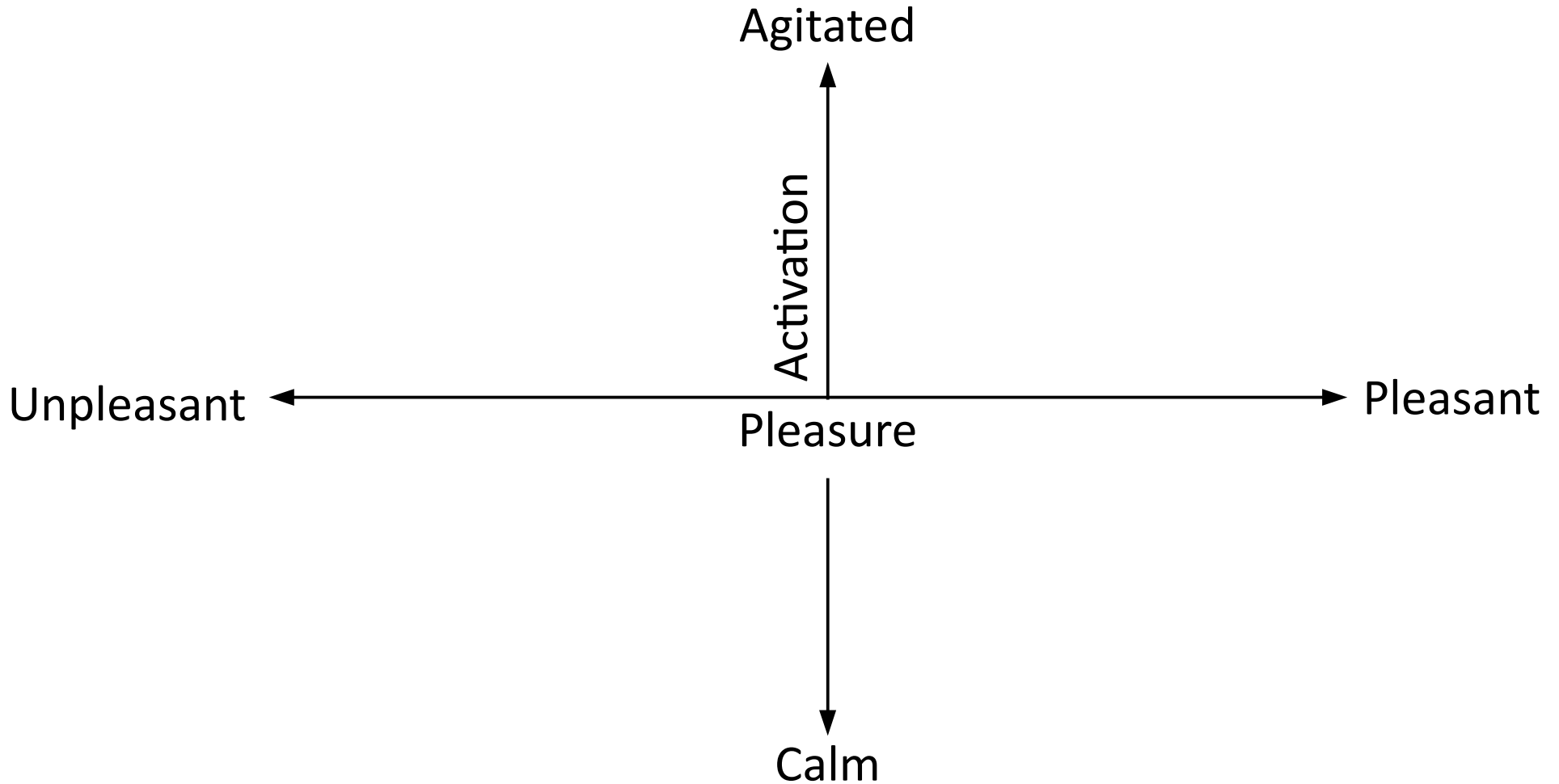
		Strategic orientation	
		Distributive	Integrative
Strategic function	Information	Distributive information <ul style="list-style-type: none">• Positions• Facts	Integrative information <ul style="list-style-type: none">• Priorities• Needs• Interests
	Action	Claiming value <ul style="list-style-type: none">• Substantiation• Threats• Power use• Bottom line• Single issue offers	Creating value <ul style="list-style-type: none">• Packaging• Trade-offs• Creative solutions• Multi-issue offers

Measurement of communication: Content analysis

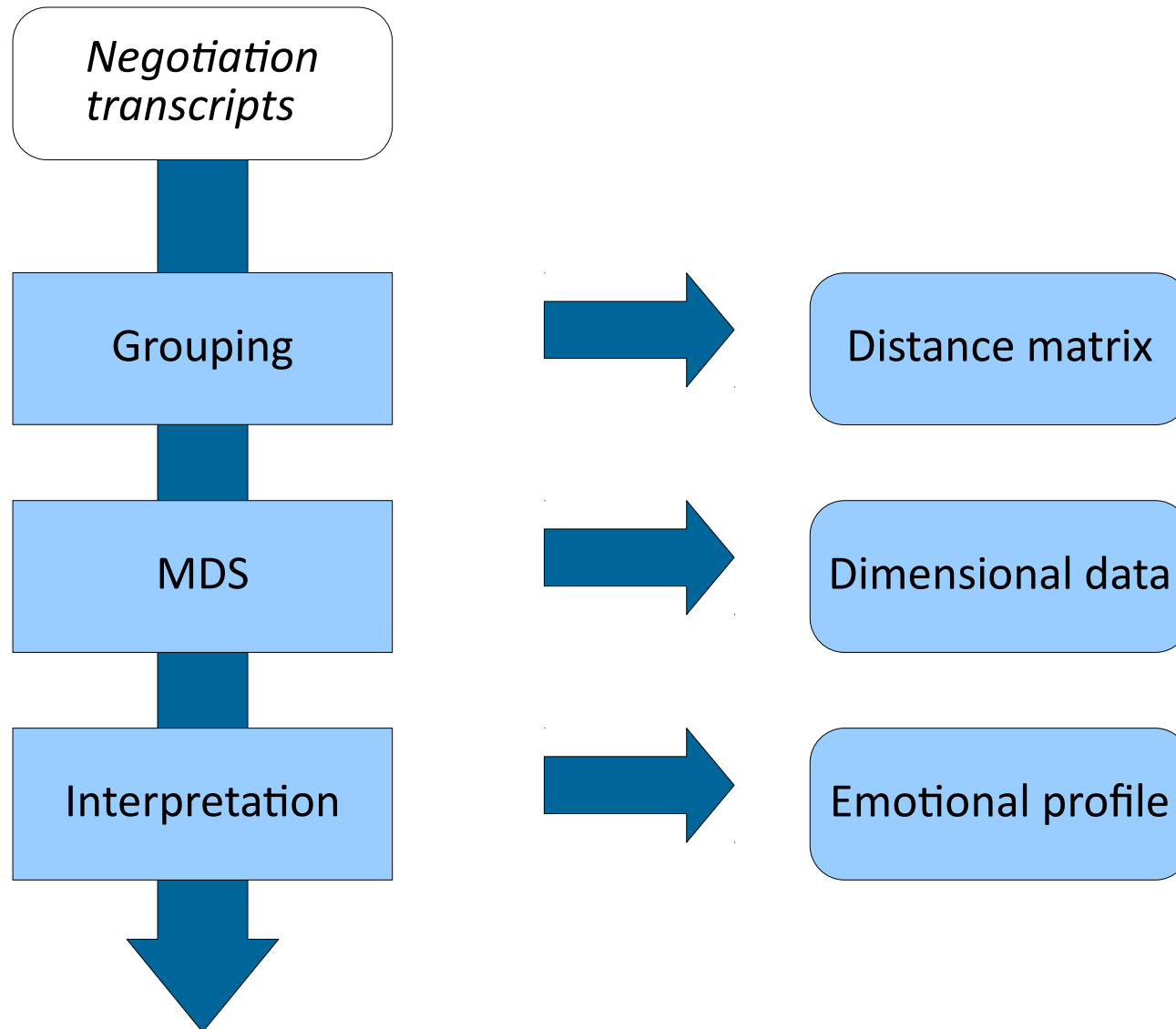


adapted from Srnka & Koeszegi (2007)

Emotions: Dimensions



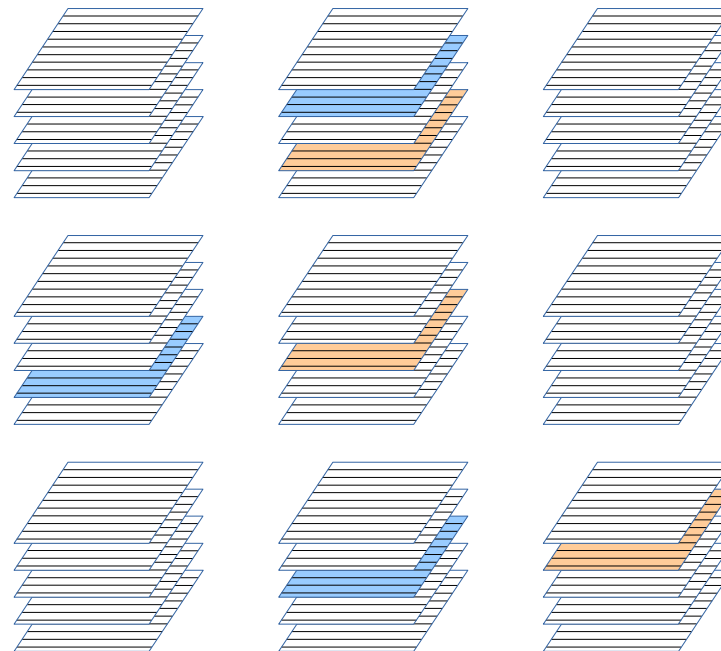
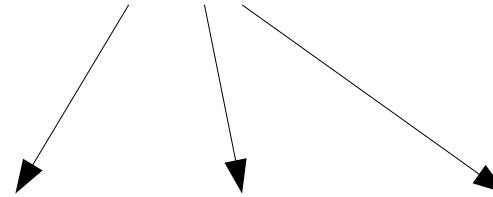
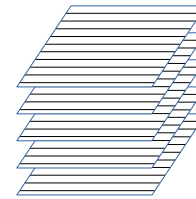
Measuring emotions



Measuring emotions



Messages



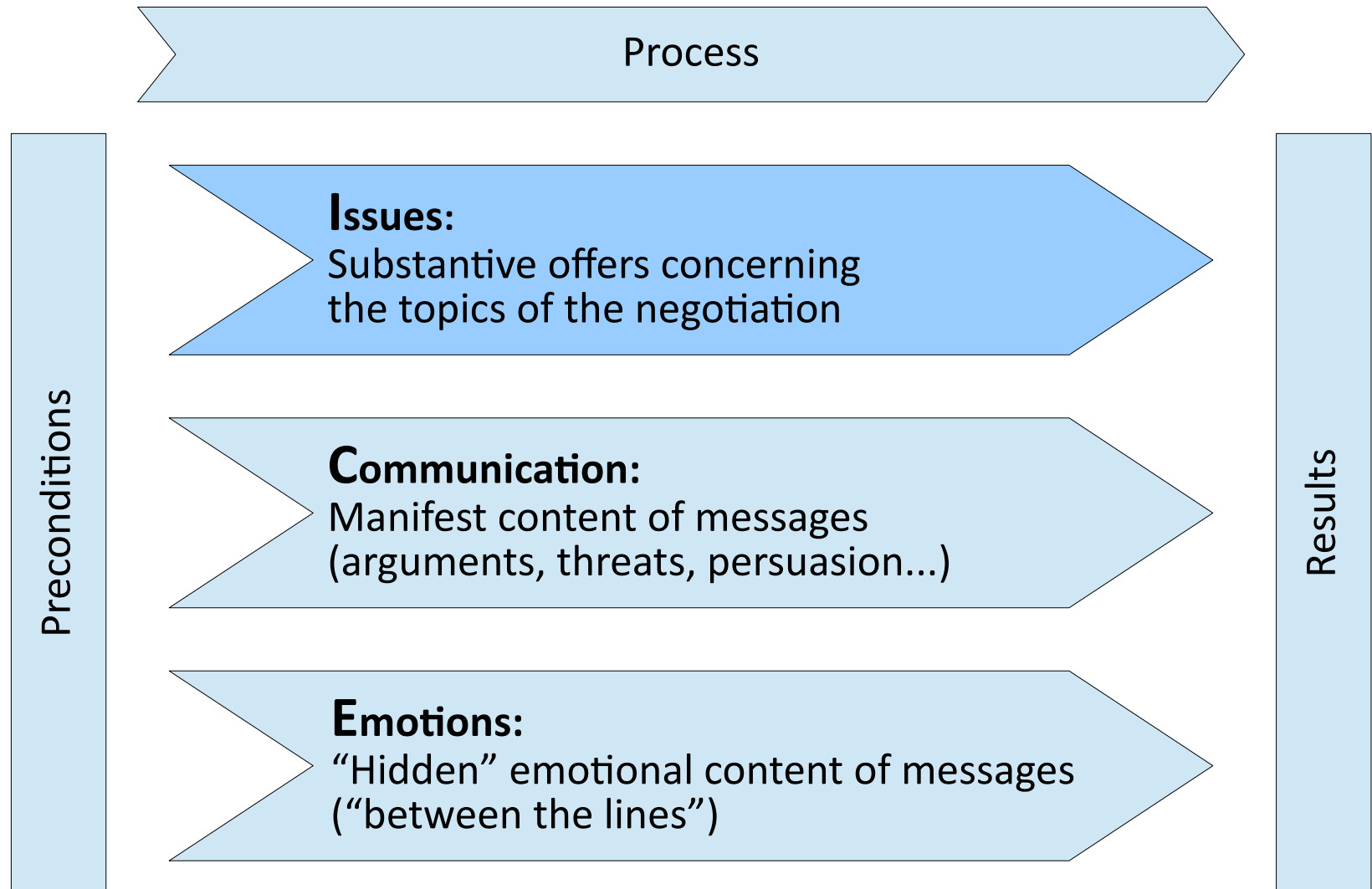
Sorted onto different stacks by several raters according to “emotional similarity”

Different raters

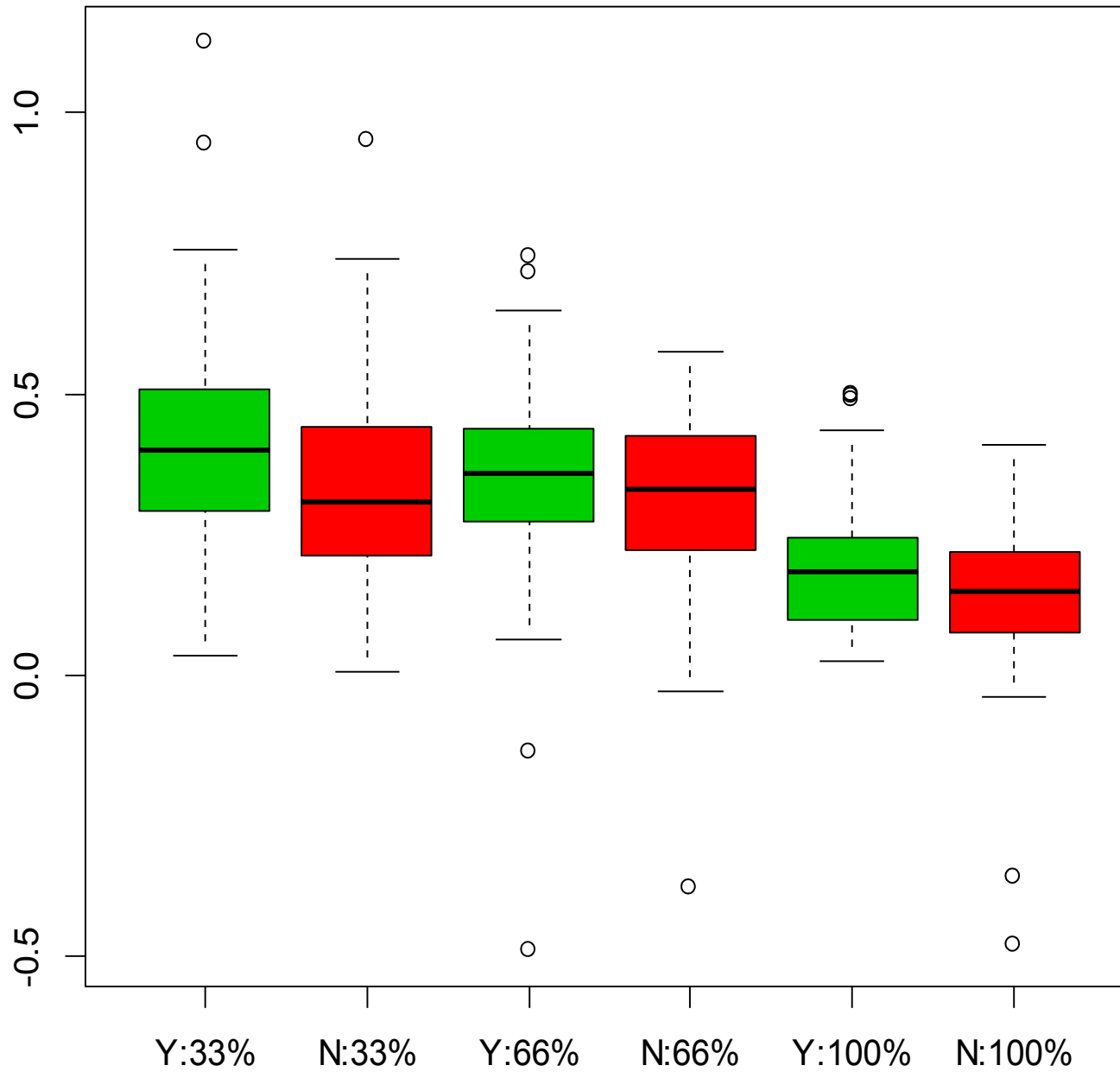
“Distance” between two messages: Number of raters who put messages on different stacks

Micro models within one level

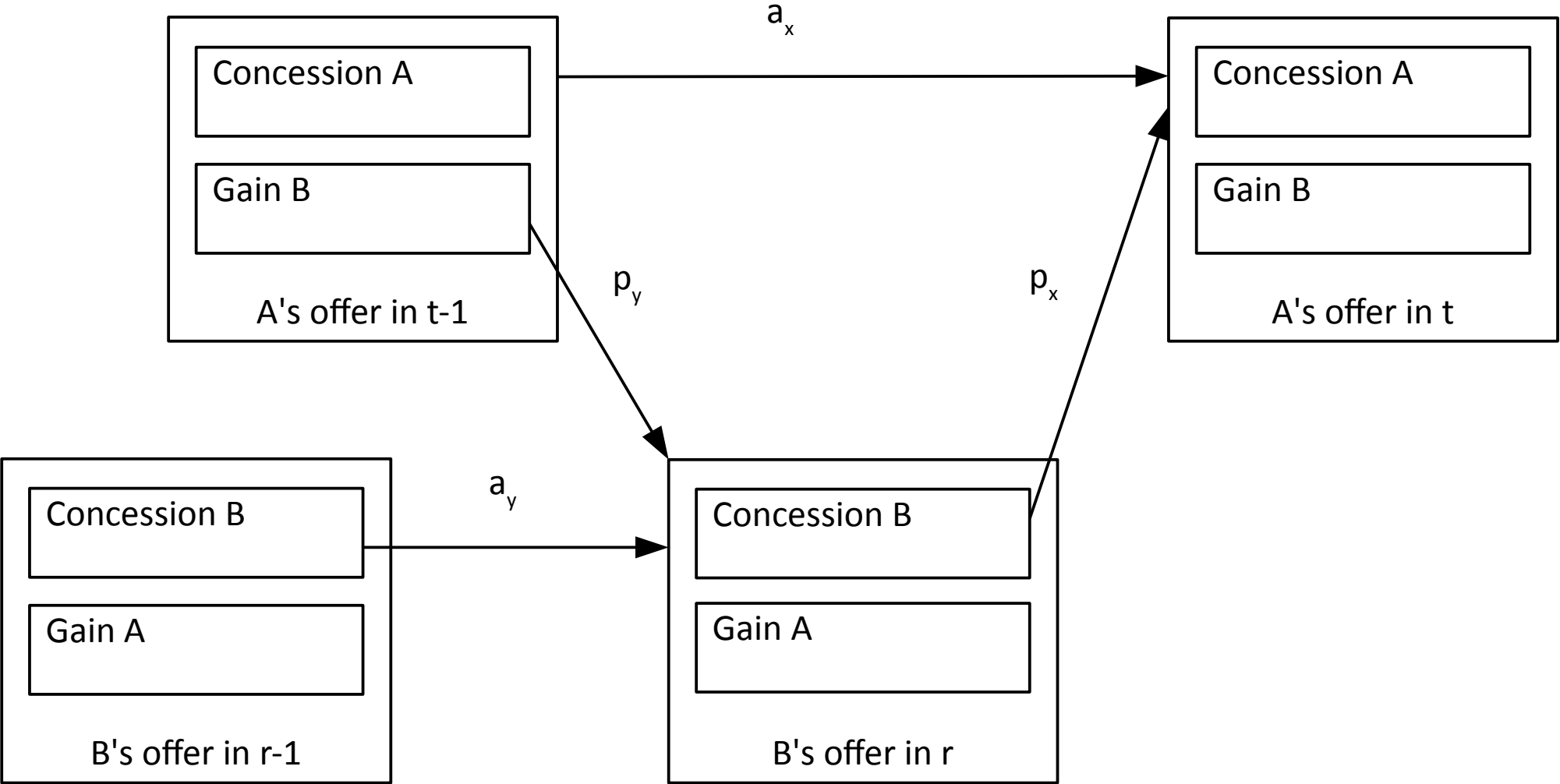
Substantive



Concessions patterns and agreement



Extended APIM

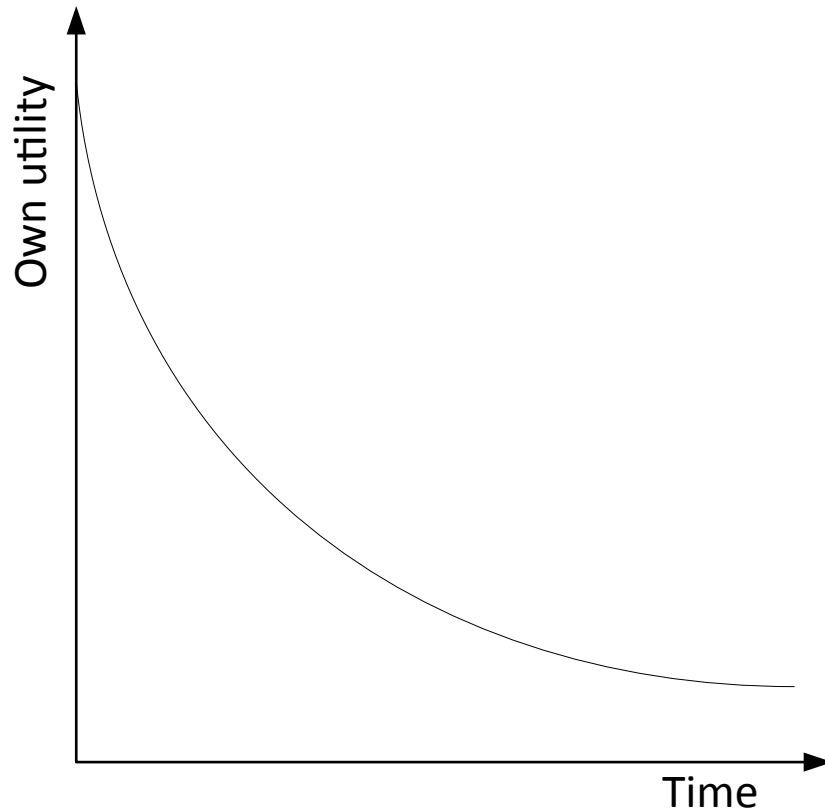


Interpretation of coefficients – Hypotheses

- Partner effect:
 - Relationship of concession to opponent's concession
 - Reciprocity
 - Partner effect should be larger in successful negotiations
- Actor effect:
 - Change of concessions over time
 - Negotiation strategy:
Initially large, then decreasing (cooperative)
vs. initially small, then increasing (competitive)
 - Actor effect negative in successful negotiations

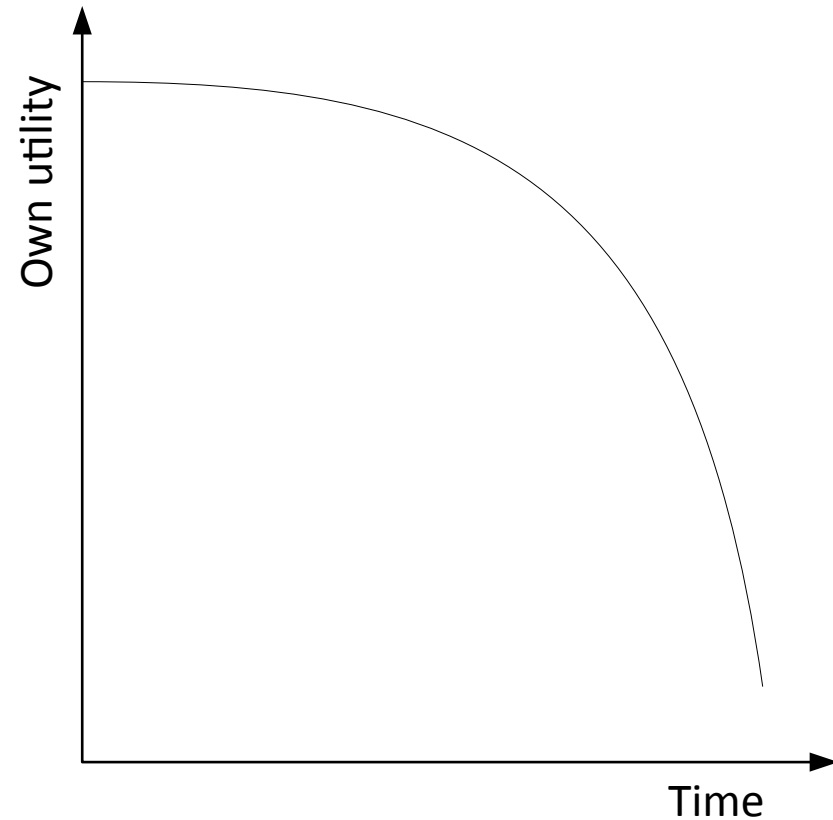
Actor effect and negotiation strategy

Cooperative strategy



- High concessions in beginning
- Level of concessions decreases
- Negative actor effect

Competitive strategy



- Low concessions in beginning
- Level of concessions increases
- Positive actor effect

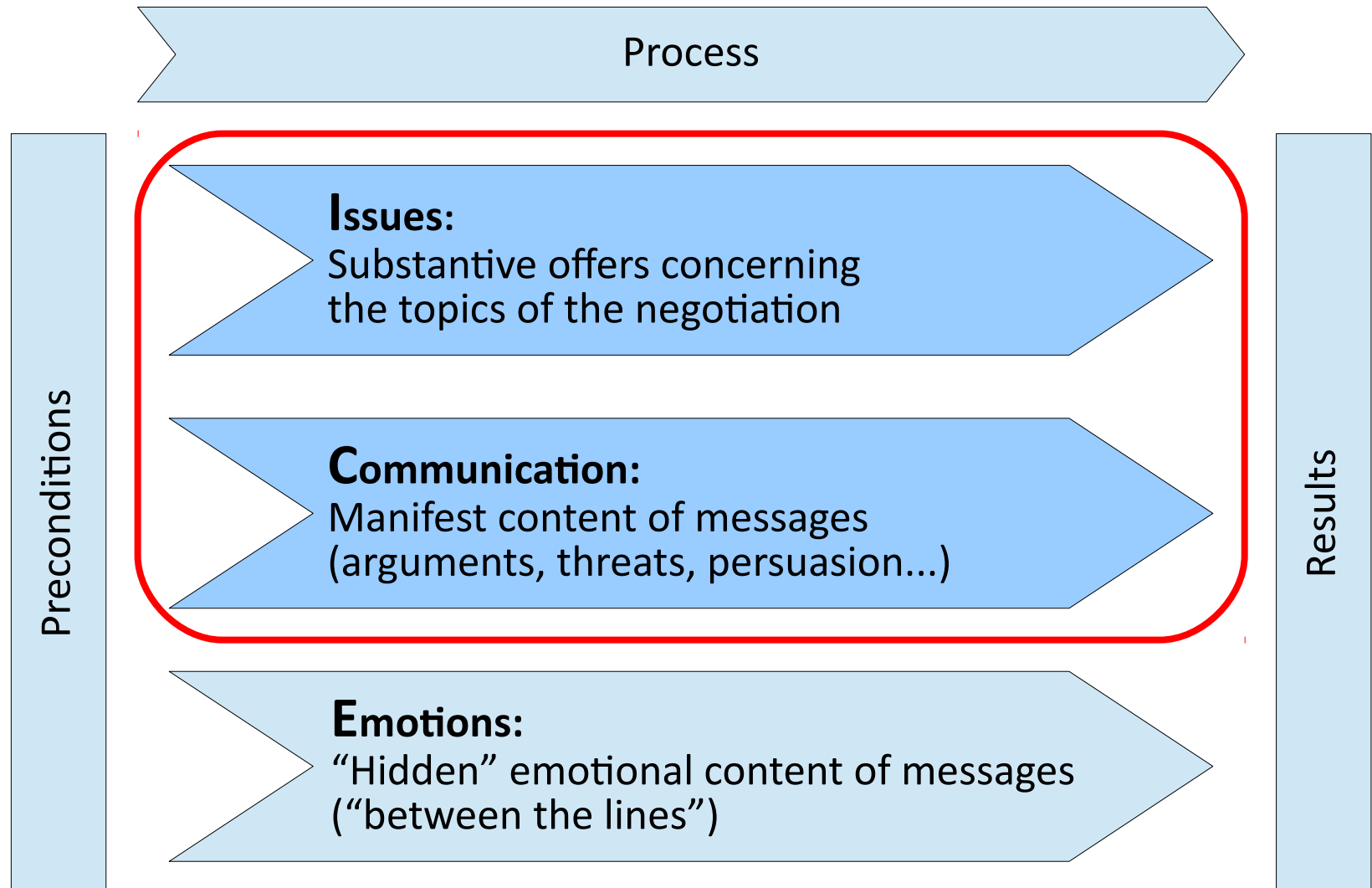
APIM model – some results

	All	Agreement	No agreement
Phase 1	*** 0.0520	*** 0.0613	0.0113
Phase 2	*** 0.0579	*** 0.0605	*** 0.0481
Phase 3	*** 0.0272	*** 0.0203	*** 0.0467
Role (buyer)	** 0.0147	* 0.0138	* 0.0197
Actor (seller)	*** -0.1369	*** -0.1587	° -0.0975
Actor (buyer)	° -0.0456	* -0.0681	0.0296
Partner (seller)	° -0.0326	* -0.0428	-0.0009
Partner (buyer)	-0.0230	° -0.0357	0.0390
AIC	-3657.77	-2714.69	-906.91
L. ratio	*** 88.75	*** 89.90	6.10

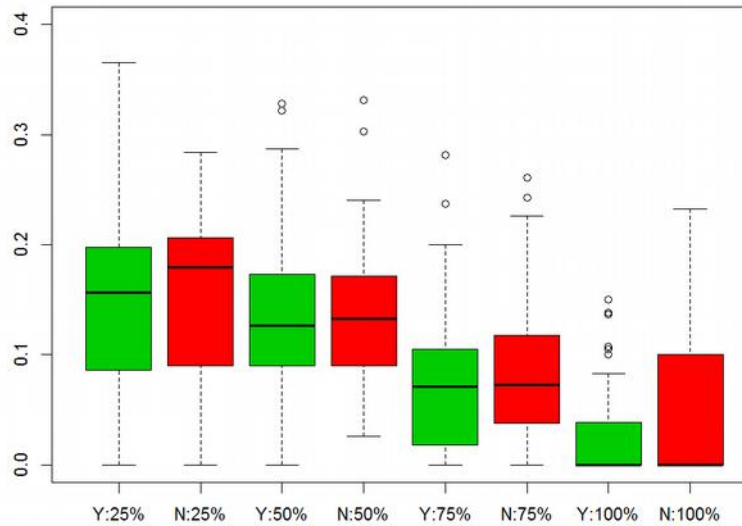
INSPIRE Database, 4210 offers from 475 negotiations (72% agreement)

Vetschera, 2016

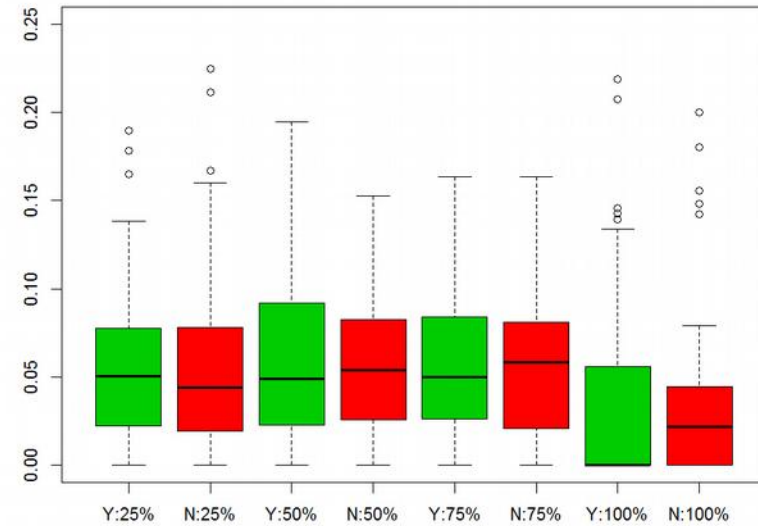
Relationships: Substantive and communication



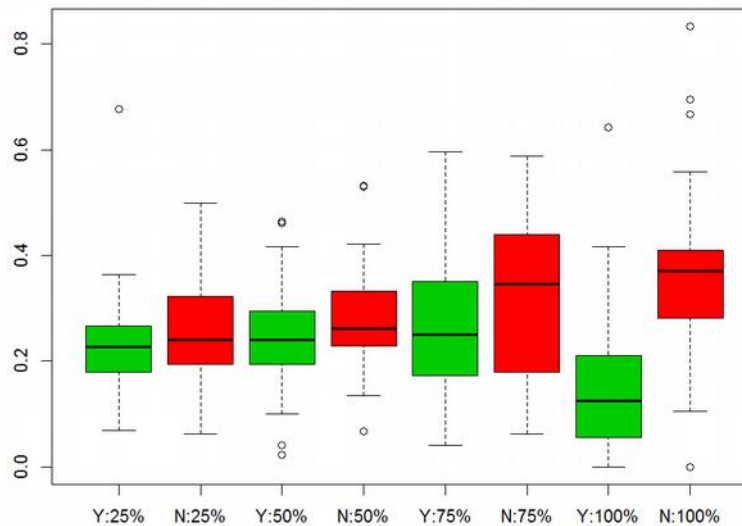
Distributive information



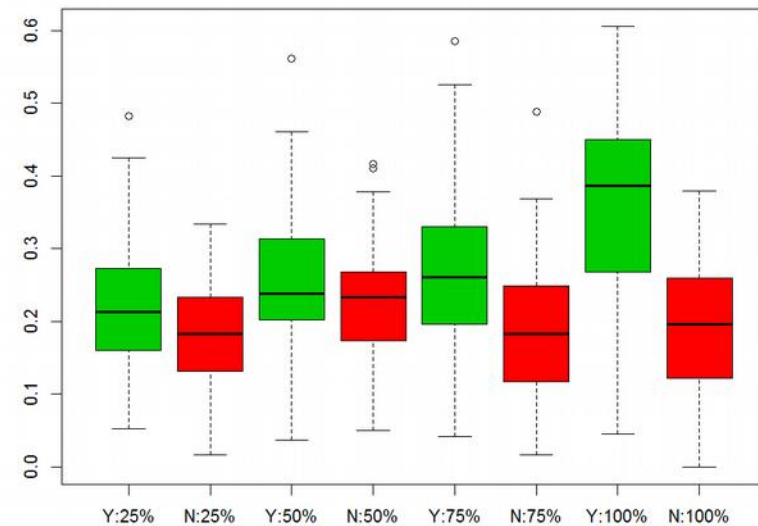
Integrative information



Claim value



Create value



Communication: Strategic action and agreement

	25%	50%	75%	100%
Create value				
Median failed	0.183	0.233	0.183	0.196
Median agree	0.213	0.238	0.260	0.386
Test	o 1037	n.s. 1212	** 870	*** 443
Claim value				
Median failed	0.241	0.262	0.345	0.370
Median agreed	0.227	0.240	0.251	0.125
Test	n.s. 1714	n.s. 1688	n.s. 1772	*** 2495

Median share of indicated type in total communication of phase
Wilcoxon test

Joint utility	25%	50%	75%	100%
Create value	0.006	* 0.204	** 0.249	-0.067
Claim value	0.070	-0.145	* -0.216	-0.062
Integrative information	0.096	-0.068	* -0.230	0.079
Distributive information	0.069	0.003	0.033	0.022

Contract imbalance	25%	50%	75%	100%
Create value	0.044	* -0.219	-0.022	** -0.260
Claim value	0.015	0.119	0.017	° 0.166
Integrative information	-0.044	0.018	0.136	* -0.192
Distributive information	-0.118	-0.046	** 0.287	° 0.159

Correlation between offer's properties and share of communication type

Filzmoser et al., 2016

Communication and concession

Concessions	25%	50%	75%	100%
Create value	-0.057	0.111	0.059	* 0.204
Claim value	-0.122	0.072	0.078	* -0.196
Integrative information	0.023	-0.043	-0.040	0.049
Distributive information	0.123	-0.028	-0.058	0.019

Gains	25%	50%	75%	100%
Create value	-0.045	0.117	0.090	0.094
Claim value	-0.068	0.088	0.000	° -0.184
Integrative information	0.066	-0.093	-0.093	0.107
Distributive information	0.136	0.048	0.025	0.091

Correlation between offer's properties and share of communication type

Filzmoser et al., 2016

Communication and gains- lagged

	Content → gain				Gain → content		
	25%	50%	75%	100%	50%	75%	100%
Create value	-0.052	-0.114	-0.030	-0.060	0.078	0.094	0.105
Claim value	0.084	0.117	0.031	0.028	* -0.211	° -0.159	° -0.177
Integrative info.	0.035	-0.130	-0.045	0.136	-0.024	0.012	-0.036
Distributive info	0.066	* 0.226	° 0.169	** 0.246	-0.080	-0.082	-0.104

Players who use distributive information gain more in subsequent rounds

Players who received more claim less value in subsequent rounds

Lagged correlations between communication content and gain

Filzmoser et al., 2016

Framing substantive behavior

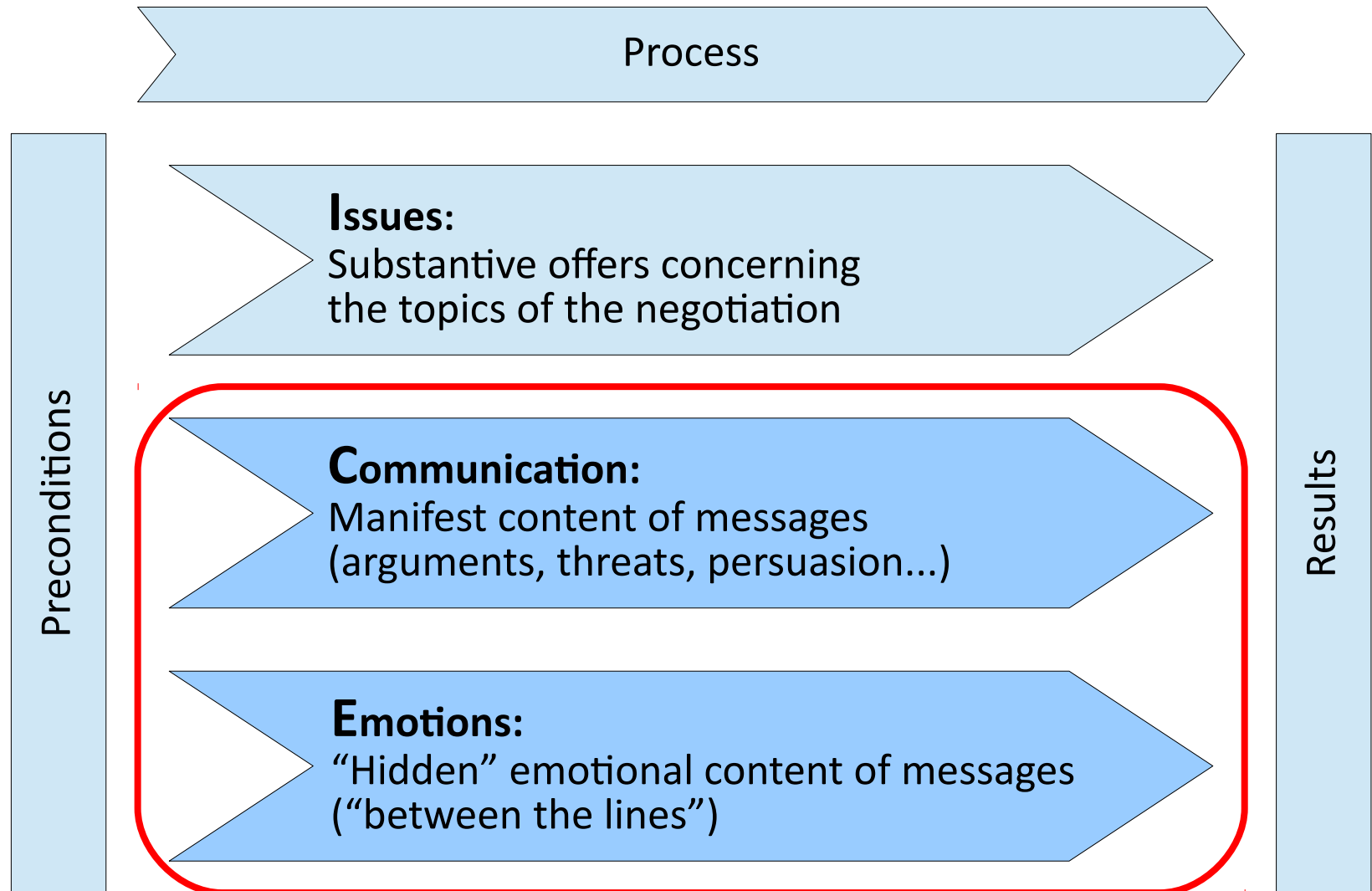
Effects of differently framed messages on substantive offers by subjects

		Mean	SD	
Initial offer	Integrative	595.41	103.01	* *
	Distributive	649.49	94.36	
Final offer	Integrative	410.54	89.98	
	Distributive	413.08	103.63	
Concession	Integrative	184.86	95.48	* *
	Distributive	236.41	93.15	

Values: Utility of party making the offer

Seferagic, 2016

Relationships: Communication and emotions



Valence	25%	50%	75%	100%
Create value	*** 0.567	*** 0.427	*** 0.672	*** 0.695
Claim value	*** -0.442	*** -0.620	*** -0.553	*** -0.463
Integrative information	-0.187	0.045	-0.154	0.002
Distributive information	* -0.288	0.065	-0.098	° -0.253
Arousal	25%	50%	75%	100%
Create value	0.203	-0.132	-0.180	0.068
Claim value	-0.044	° 0.226	* 0.338	* 0.330
Integrative info	0.121	-0.094	* 0.301	° 0.250
Distributive info	0.074	0.169	0.110	0.095

Claiming value is linked to strong negative emotions

Filzmoser et al. 2016

Emotions and own/opponent communication

		Own communication				Opponent			
		25	50	75	100	25	50	75	100
Create value	Valence	*** 0.533	*** 0.367	*** 0.569	*** 0.616	° 0.174	0.131	*** 0.330	* 0.212
	Activation	° 0.178	-0.020	-0.090	-0.086	0.038	-0.123	° -0.158	° 0.158
Claim value	Valence	*** -0.339	*** -0.480	*** -0.506	*** -0.433	* -0.213	*** -0.311	* -0.209	-0.144
	Activation	-0.064	° 0.160	° 0.176	*** 0.299	0.018	0.108	** 0.274	0.069
Integr. info.	Valence	* -0.187	-0.047	* -0.201	-0.039	-0.053	0.099	0.011	0.041
	Activation	-0.015	0.002	** 0.245	0.089	0.147	-0.103	0.139	° 0.163
Distr. info.	Valence	** -0.258	0.072	-0.017	** -0.218	-0.135	0.013	-0.113	-0.084
	Activation	0.005	0.004	0.004	0.050	0.081	** 0.201	0.146	0.052

Filzmoser et al. 2016

- Negotiation processes can only be understood by considering **all dimensions**
- By now, reliable methods for **measurement** of all dimensions are available
- Although there is progress, modeling the **time structure** is still a challenge
- Only few studies consider **interactions** between dimensions
- Here, the question of **causality** is mostly open

References

- Filzmoser, M., P. Hippmann and R. Vetschera (2016). "Analyzing the Multiple Dimensions of Negotiation Processes." *Group Decision and Negotiation* 25: 1169-1188.
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- Seferagic, H. (2016). *Framing in Negotiations*. PhD Thesis, University of Vienna. <http://othes.univie.ac.at/42582/>
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Thank you for your attention!

