Comment faire une synthèse lorsque l'intervention est complexe et que les données sont quantitatives et qualitatives

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Gréas
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Questions pour discussion

1. Comment faire une synthèse des connaissances lorsque les évaluations portent sur une intervention « complexe » ?

2. Quelles méthodes d'analyse peut-on utiliser pour une synthèse lorsque les recherches répertoriées sont de natures diverses, sur le plan théorique, conceptuel et méthodologique ?

Questions pour discussion (suite)

3. Peut-on mettre ensemble des résultats de recherches « qualitatives » et « quantitatives », et si oui, comment ?

Certains constats

1. La plupart des études évaluatives sont de nature quantitative

2. Les interventions évaluées sont souvent complexes (e.g. modes d'organisation)

Certains constats (suite)

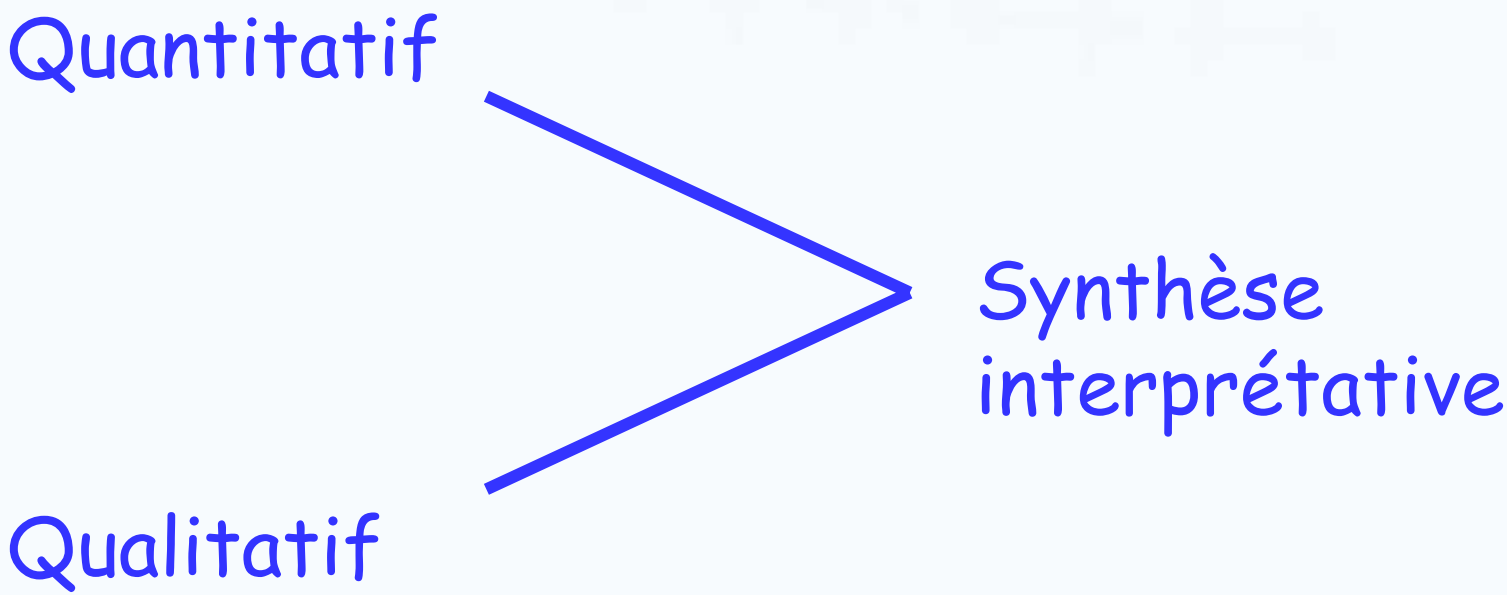
3. Certains éléments « qualitatifs » sont souvent présents dans les études quantitatives, mais ne sont pas toujours utilisés de façon explicite

4. Certains proposent de combiner les éléments quantitatifs et qualitatifs, mais peu de chercheurs l'ont fait

Rôles possibles de la recherche qualitative dans des revues systématiques

1. Complémentaire (enhancement model)

2. Différent (difference model)

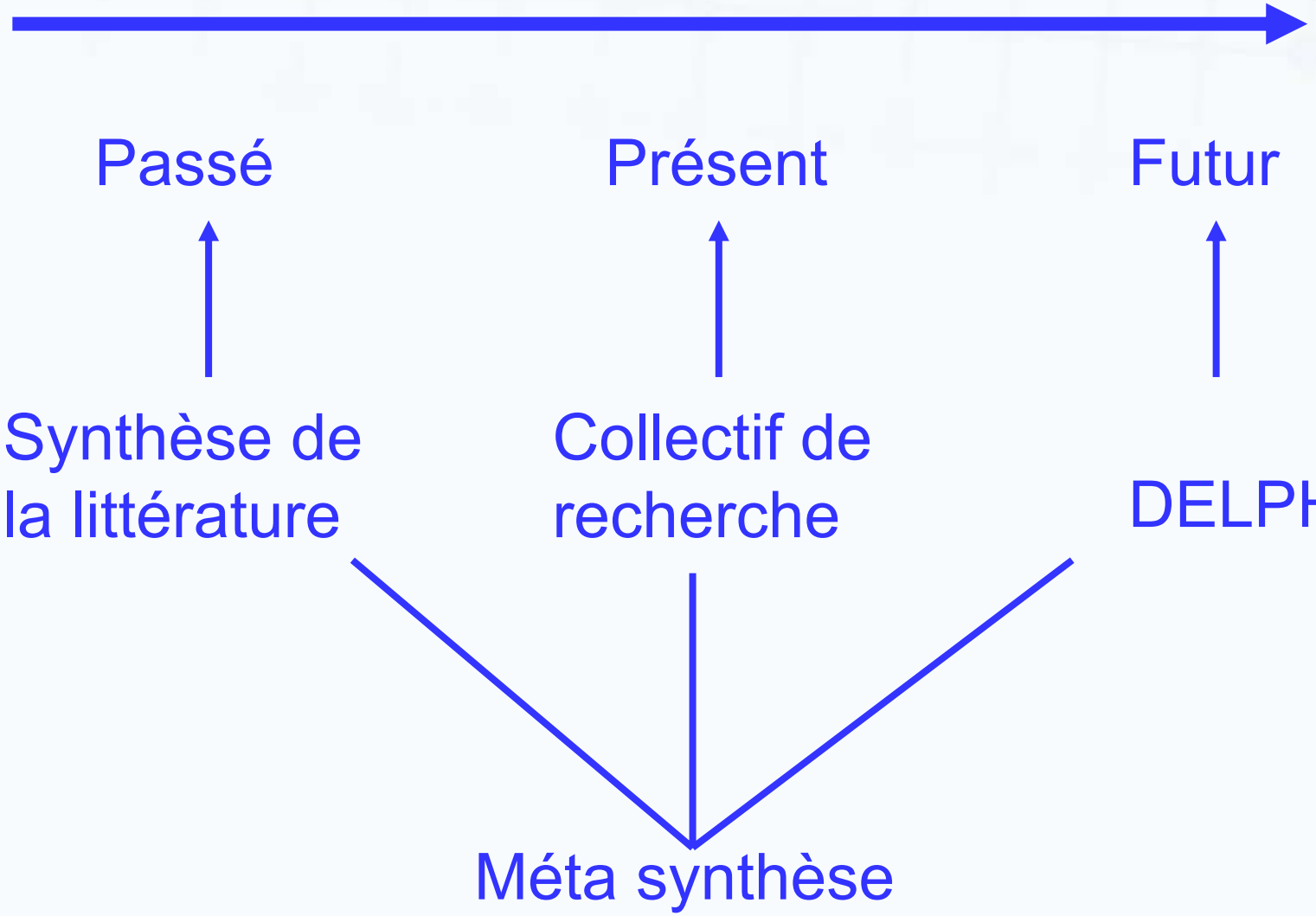


Comment actualiser ou donner une pertinence contemporaine à des résultats de synthèses de la littérature ?

- Via son fondement théorique

- En les « triangulant » avec des données « actuelles » ou « futures » (convergence)

Horizon temporel



La revue synthétique de la littérature

- quantitative
- qualitative
- mixte

Le collectif de recherche

Les méthodes basées sur le jugement d'experts (DELPHI)

Un cas pratique de synthèse interprétative réalisée par un groupe de chercheurs du GRIS

Gréas 1

Groupe de recherche sur l'équité d'accès et l'organisation des services de santé de 1re ligne

A method combining qualitative and quantitative criteria to assess the strength of scientific evidence in primary care organizations

Choices for Change: Path for Restructuring PHC in Canada Report published by CHSRF, November 2003

Submitted to
CHSRF, Ministries of health of Saskatchewan,
Québec, N-B and Canada

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We were commissioned by CHSRF to do a synthesis on primary health care addressing two main questions:

1. What are the various models of primary health care organization?

2. What effects (health and service) are associated with them?

Contextual factors of the synthesis

1. Intervention is complex, not simple (organization as a whole, not one single attribute)

2. Diversity of studies, designs and methods

3. Quantitative studies are predominant

Overall approach adopted

Very early in the process it was clear that "classical" meta-analysis was not possible

Consequently, a more flexible approach that we called "interpretative synthesis" was chosen, integrating

- different methods and designs
- quantitative and qualitative data

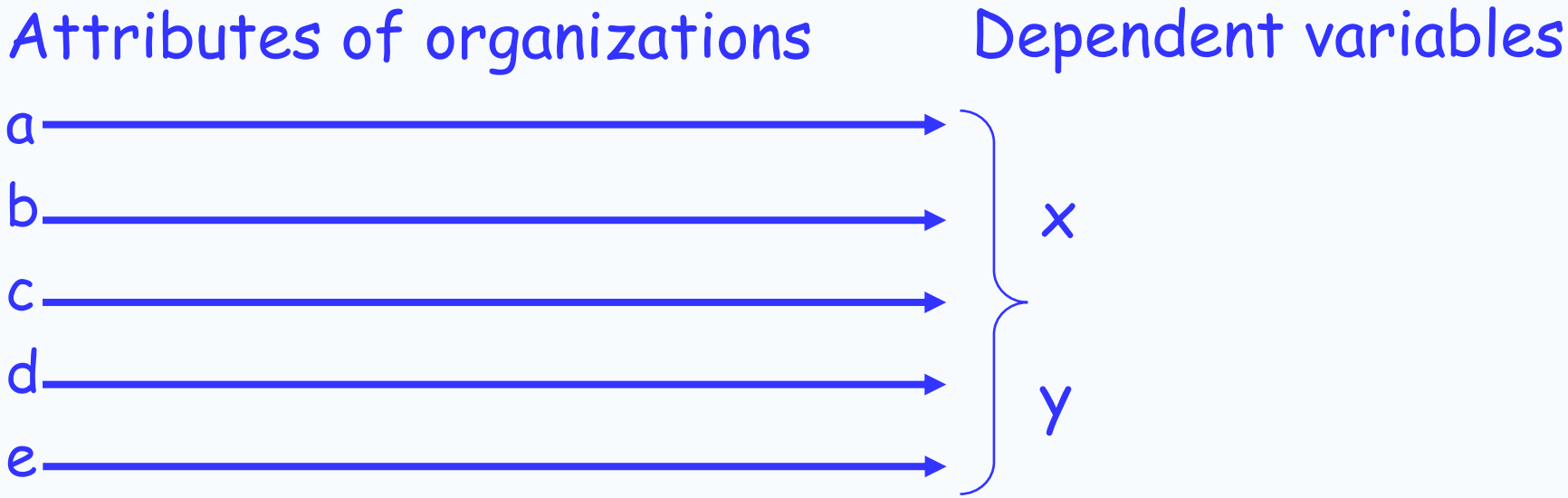
Three major steps

- Conceptualization and operationalization of primary care organizations
- Linkage of the effects with primary care organization models
- Presentation of the results in an easily understandable form

1st step

Conceptualizing and operationalizing organizational variables

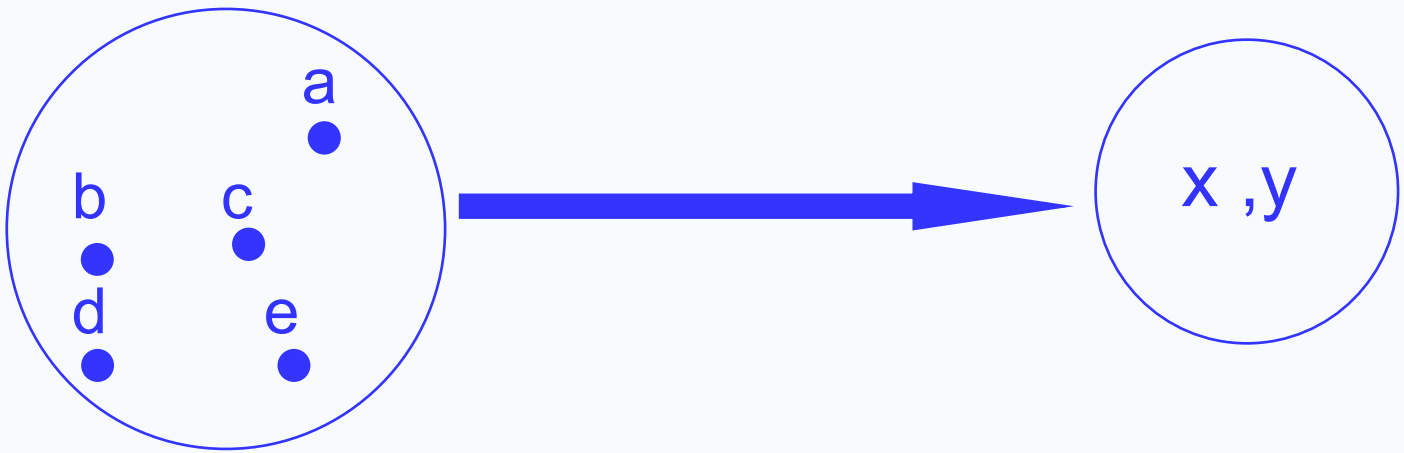
The contingency (anatomical) view of organizations



The configurational (holistic/systemic, physiological) view of organizations

Attributes of organizations

Dependent variables



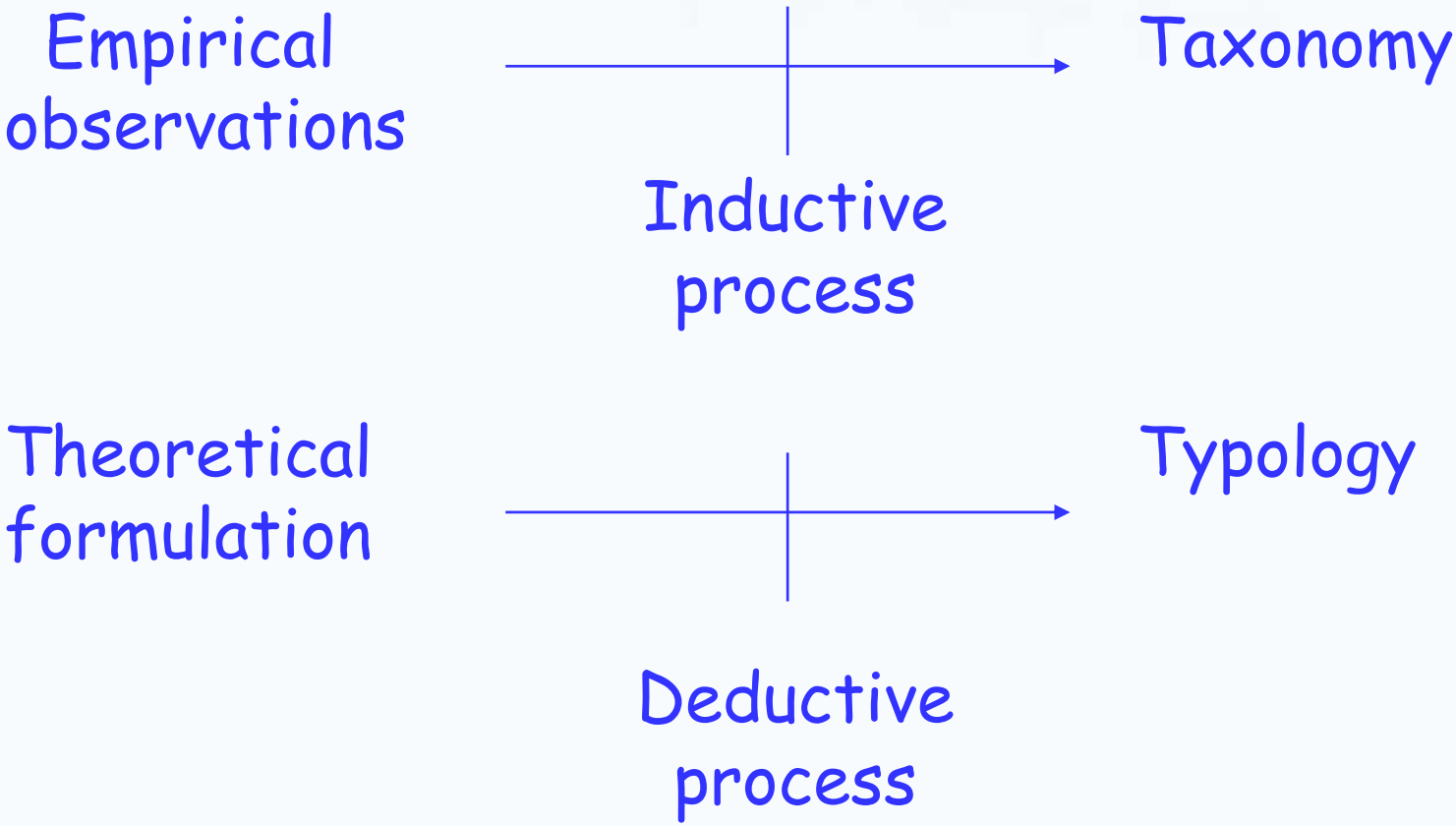
"We use the term **organizational configuration** to denote any multidimensional constellation of conceptually distinct characteristics that commonly occur together"

(Meyer, Tsui and Hinings, 1993)

"Configurations may be represented in **typologies** developed conceptually or captured in **taxonomies** derived empirically"

(Meyer et al., 1993)

Two approaches to the configurational perspective



We adopted a mixed strategy both conceptual and empirical

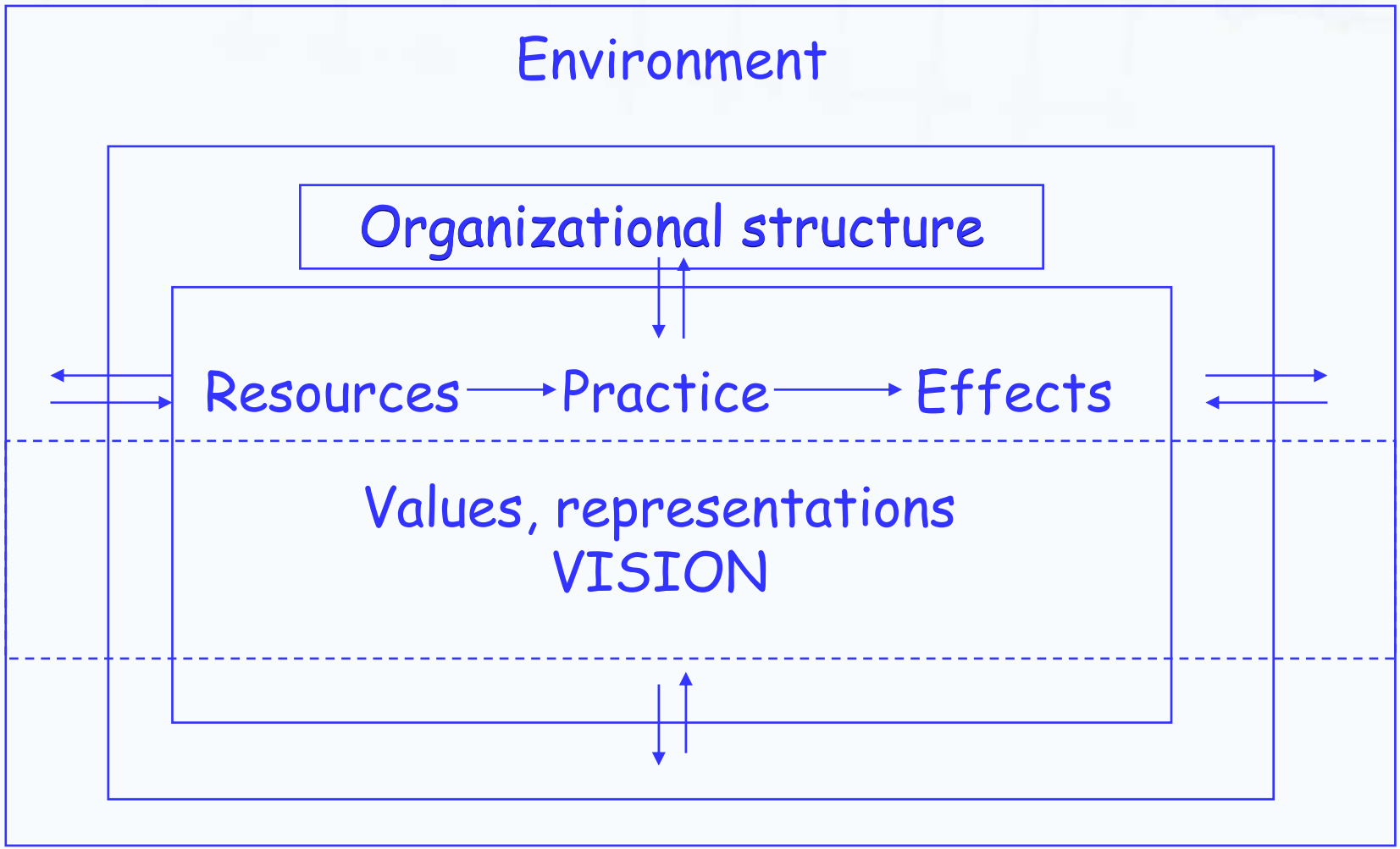
1.1 A conceptual approach

Organization of PHC : Concept

PHC as an organized system for collective action comprises the following elements interacting with each other in a dynamic and coherent way:

- **Vision** : beliefs, values and goals guiding action
- **Resources**: quantity and diversity
- **Structure**: rules, incentives, governance
- **Practice**: processes and mechanisms underlying services production
- **Effects**: desired changes over time
- **Environment**: context in which actors operate

Primary health care as an organized system for collective action



1.2 An empirical approach

Taxonomy: Case Selection

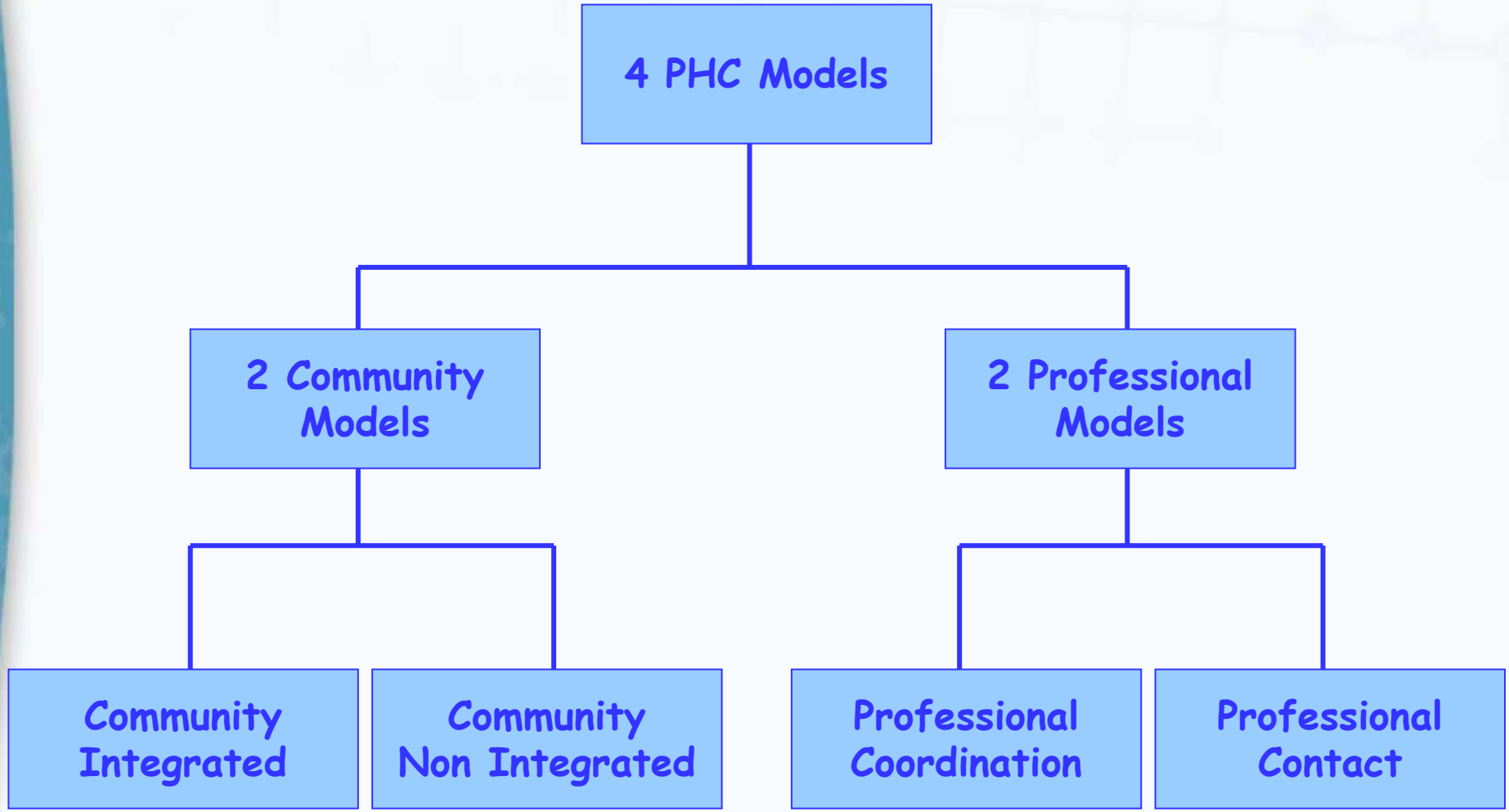
- Criteria:
  - Relevant to Canada
  - Provide medical care (necessary condition)
  - Services available within the healthcare system
  - Target the entire population
  - Community-based (hospitals excluded)

- 28 Cases selected
  - Origin: 1 international (WHO), 16 Canada, 8 Europe, 2 Oceania, 1 USA
  - Status: 9 implemented, 5 experiments, 14 proposals

Statistical analysis

Cluster analysis technique used to group cases into homogeneous categories or models

Empirically derived taxonomy of PHC Models



	Community Models	Professional Models
Vision	Population health & development Health needs Defined population	Provision of services Medical services Clients or enrolees
Resources	Multidisciplinary team Funding: lump sum from RHA RHA oversee services & resource allocation to PHC & other levels of healthcare	Team: MDs & Nurses Funding: via MD remuneration
Governance	Healthcare centres Governance: Pop. representatives MDs paid: time-based	MDs: individual/group Governance: professionals MDs paid: service-based
Practice	Wide range of services: from promotion to palliative, medical to community, screening to home care	Mainly medical services: from preventive to curative

Discriminant attributes for differentiating the models of the taxonomy

Integration/ Coordination	Responsibility: Population	Responsibility: Clientele
+	Community integrated model	Professional coordination model
-	Community non integrated model	Professional contact model

2nd step

Linking the effects with each model of the taxonomy

Indicators of effects

- Effectiveness (health & service effectiveness)
- Accessibility and equity of access
- Continuity (informational, relational, care management)
- Quality
- Productivity: Cost and utilization (substitution effect)
- Responsiveness

Our approach

- Integrates both qualitative and quantitative elements found in the studies
- Predominance of quantitative material ("enhancement" rather than "difference" role of qualitative)
- Concern for both internal and external validity
- Analysis based on interpretation, but explicit and reproducible (interpretative synthesis)

5 sub-steps

- Tracking and selection of articles
- Summarizing articles
- Attribution of effects to models of the taxonomy
- Assessing the strength of evidence
- Producing a global judgment (score) for each model

2.1 Tracking and selection of articles

Data banks (Medline, EBM, Cinahl, Econ-Lit,...)
1995 et +

KEYWORDS

1) Primary health care : ≈20 000 references
   + Organization
   + Effects

INCLUSION

Title, summary
- Comparison between models
- Effects

SELECTION (EXCLUSION)

177 publications : reading of articles
- No medical services
- Organizational context not specified
- Organizations not relevant (e.g. hospital, developing countries)
- non discriminant attributes

35 articles selected + 3 projects (Transition Fund)

Methods for reviewing articles and reports

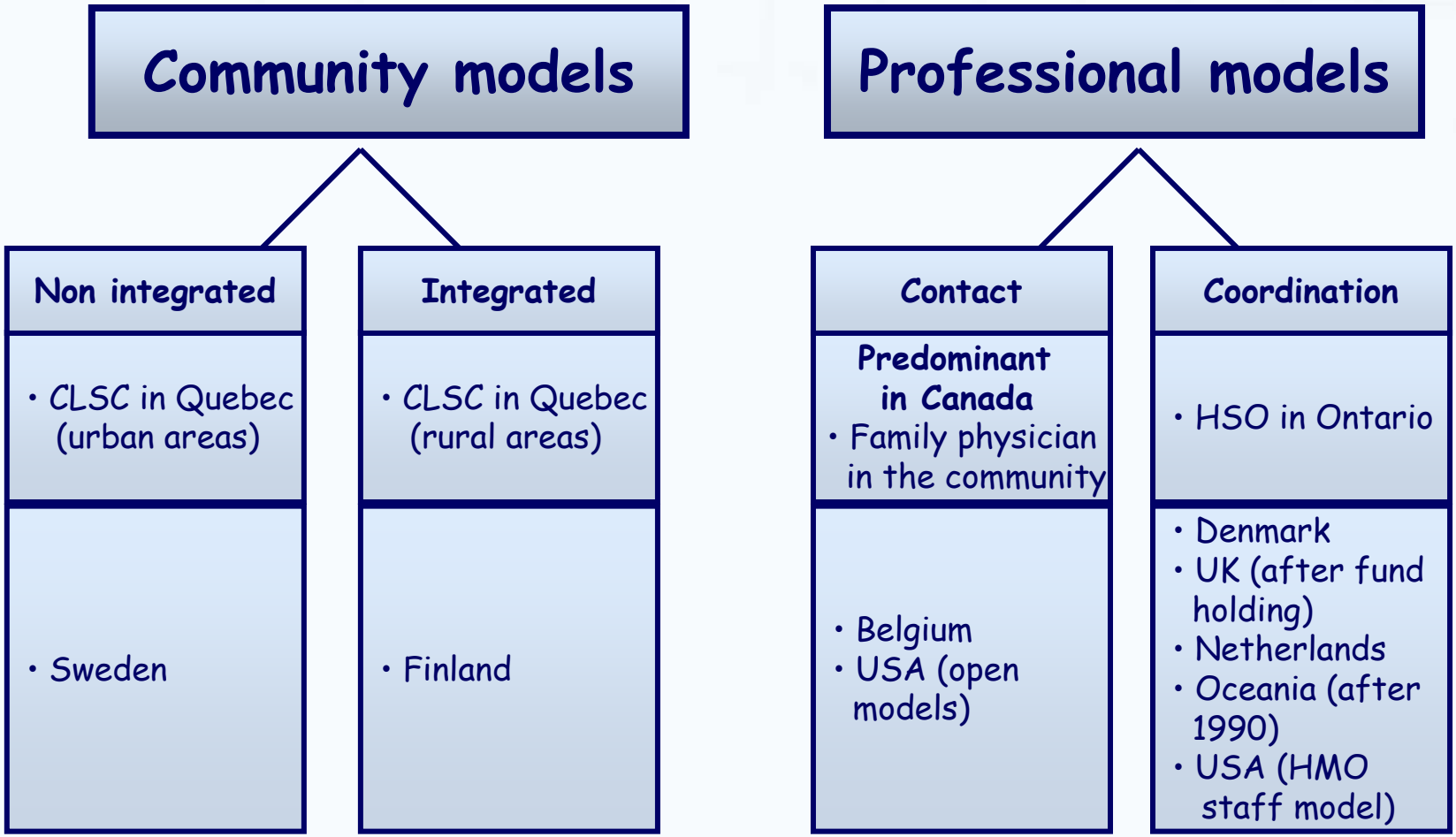
- Selection of 38 articles and reports (including meta-analyses)
- Published or produced between 1995-2002
- Keywords: PHC and selected effect indicators
- Comparisons established between at least two models of taxonomy
- Countries represented: Canada, USA, UK, Australia, New Zealand, Scandinavia

2.2 Summarizing each article

2.3 Attribution of effects to models of the taxonomy based on organizational characteristics according to two criteria:

- comparisons between models
- comparisons between discriminant attributes (mode of remuneration, multidisciplinary, role sharing and collaboration)

Attribution of effects to models



2.4 Assessing the strength of the evidence

	Internal validity	External validity
Quantitative criteria	Design Sample size (statistical power)	Statistical inference Study population Number of sites
Qualitative criteria	Logic of intervention Contextual factors	Theoretical inference Reproducibility of implementation conditions

- 2 teams of 2 judges
- Interjudge reliability and consensus
- Attribution of internal and external validity scores to each study

Table A2.2 Matrix for analyzing the strength of empirical data evidence

Internal validity

Quantitative Factors		
Criteria	Levels	Indicators
Designs	1.	Randomized trials
		Multiple chronological series
Size of sample or population	1.	Large (with adequate statistical power)
Qualitative Factors	**Levels**	**Indicators**
Criteria		
Intervention logic (theoretical plausibility)	1.	Presentation of a theoretical framework and statement of assumption, deductive approach generally found in the introduction; or emerging or grounded theory, inductive approach generally found in the discussion
Context	1.	Explicit and detailed reference to contextual factors that influence the relationship between the intervention and impact, based on a fairly formal analysis of implementation

Table A2.2 Matrix for analyzing the strength of empirical data evidence

External validity

Quantitative Factors Criteria	Levels	Indicators
Statistical inference	1.	Random sample
Study population	1.	Large (e.g., an entire country)
Qualitative Factors **Criteria**	**Levels**	**Indicators**
Theoretical inference	1.	Explicit reference to a theory of intervention that allows application of the same theory or logic to other contexts and supports their generalization
Reproducibility of conditions prevailing in the applied study	1.	Experimental conditions are analysed in detail, to predict the likely effect of the same intervention in settings different from that in the research

Figure A2.2a
Form used for assessing the internal and external validity of empirical references

Reference:

Reader(s):

Quantitative factors

		Internal validity	v
Lev 1	A	RCT, multiple chronological series, pre-post cohort, comparison group	
	B	Population or sample with size ++ (power ++)	
Lev 2	A	Other quasi-experimental comparison group	
	B	Sample with average size, statistical power: variable	
Lev 3	A	Non-experimental approaches	
	B	Small sample	

Qualitative factors

		Internal validity	v
Lev 1	A	Intervention logic: theoretical framework, assumptions or anchored theory	
	B	Context: context factors linked to the intervention criticized in relation (explanation) to the impacts (implementation analysis)	
Lev 2	A	Intervention logic: reference to theoretical factors and high plausibility	
	B	Context: contextual factors raised but without implementation analysis	
Lev 3	A	Intervention logic: little or no reference to intervention theory or logic	
	B	Context: little or no reference	

Quantitative factors

		External validity	v
Lev 1	A	Study population: large population	
	B	Random sample or entire population	
	C	Multi sites > 5	
Lev 2	A	Study population: Average or small population and/or selection	
	B	Non-random sample	
	C	Few sites < 5, > 1	
Lev 3	A	Study population	
	C	A single site	

Qualitative factors

		External validity	v
Lev 1	A	Experimental conditions	
	B	Theoretical inference	
Lev 2	A	Experimental conditions	
	B	Theoretical inference	
Lev 3	A	Experimental conditions:	
	B	Theoretical inference:	

2.5 Producing a global judgment on outcomes for each model

Four criteria:

- Number of observations
- Direction of effect (including magnitude of effects)
- Convergence of observations
- Strength of evidence (internal and external validity)

Ratings of global judgment on outcomes

- Effective (++): many observations/strong evidence/convergence
- Not effective (- -): idem - other direction
- Probably effective (+): few observations/weak evidence/convergence
- Probably not effective (-): idem - other direction
- Uncertain (?): contradictory or only one observation
- Indifferent (=): many observations/strong evidence/convergence towards the absence of difference

Figure A2.2b
Legend for reading tables: example of continuity

CONTINUITY	Studies considered	Comm. integrated model Comm. non-integrated model	Prof. coordinated model Prof. contact model	IV	EV	*No.*	*Conv*	*Strength*	*JDGMT*
Relational continuity		15 +		2.3	2.9	Lg.	Yes +/=	Low	+
		9 =		2.2	3.2				
		3 -		4	2				
Care management		5 +		2.9	3.1	Avg.	Yes +	Low	+
…	…	…	…	…	…	…	…	…	…

Synthesis of information and judgment

Internal and external validity scores (from 1 (strongest) to 4 (weakest))

Aspects of impact

Effect measured

Selected bibliographic references, see numbers of corresponding studies in list in Table A2.1

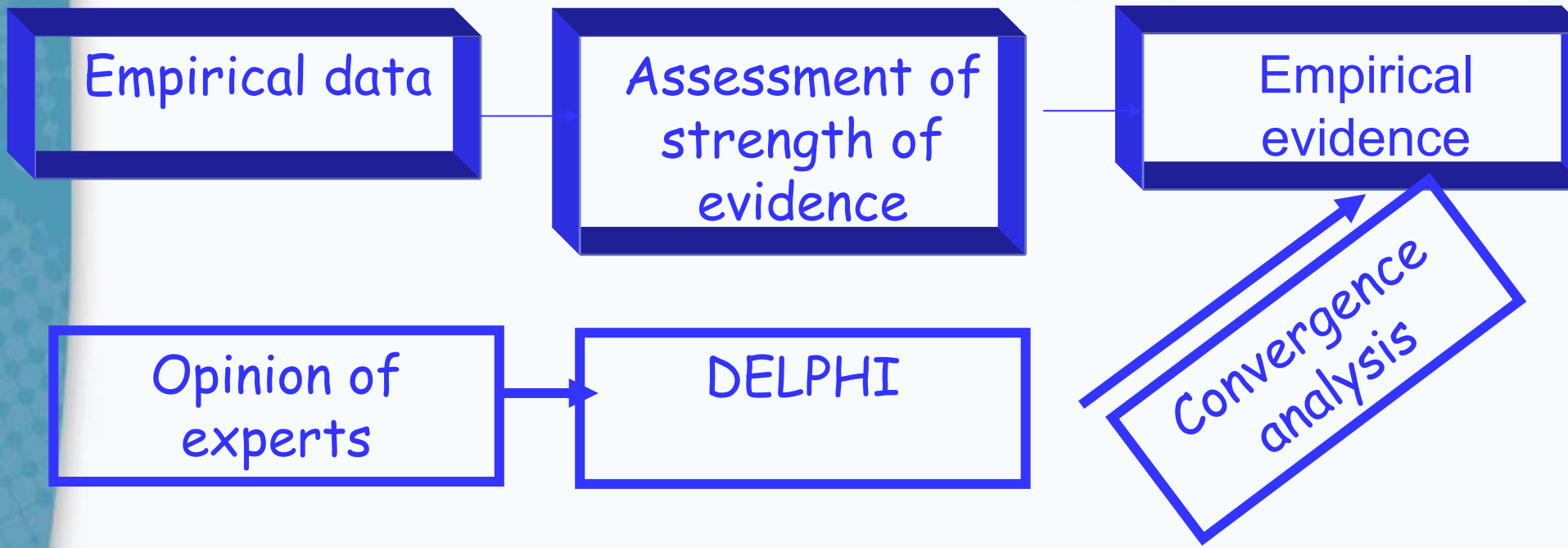
Meaning and number of observations
→ sign always refers to the indicator
→ example present:
comparison of community model with professional model

3rd step – Showing the results

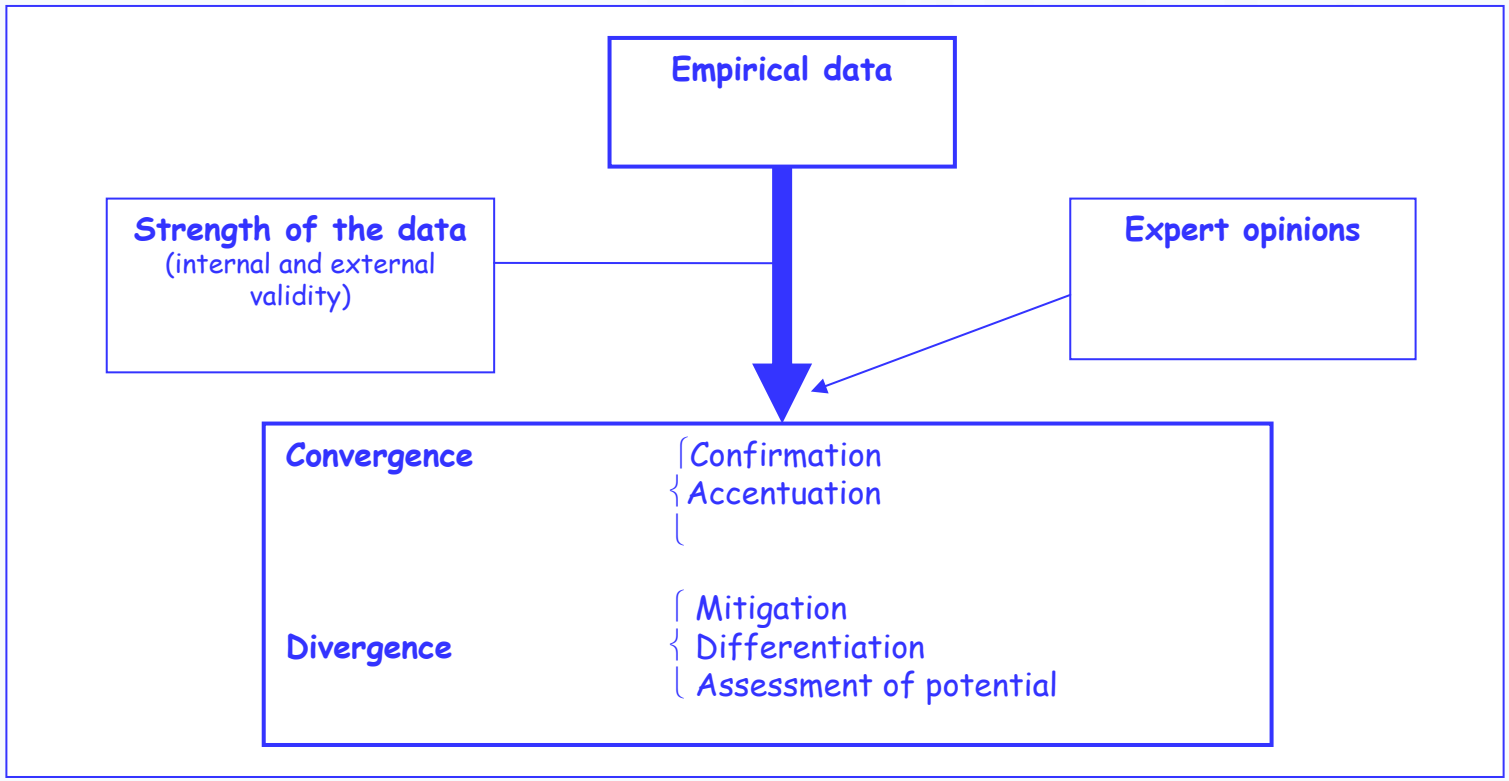
Based on those scores, each model was given a rank, the professional contact model being the reference category.

The relative position of the four models on all effect indicators was presented in an integrating figure.

Overall strategy in searching for evidence



Algorithm for integrating the empirical data and expert opinions

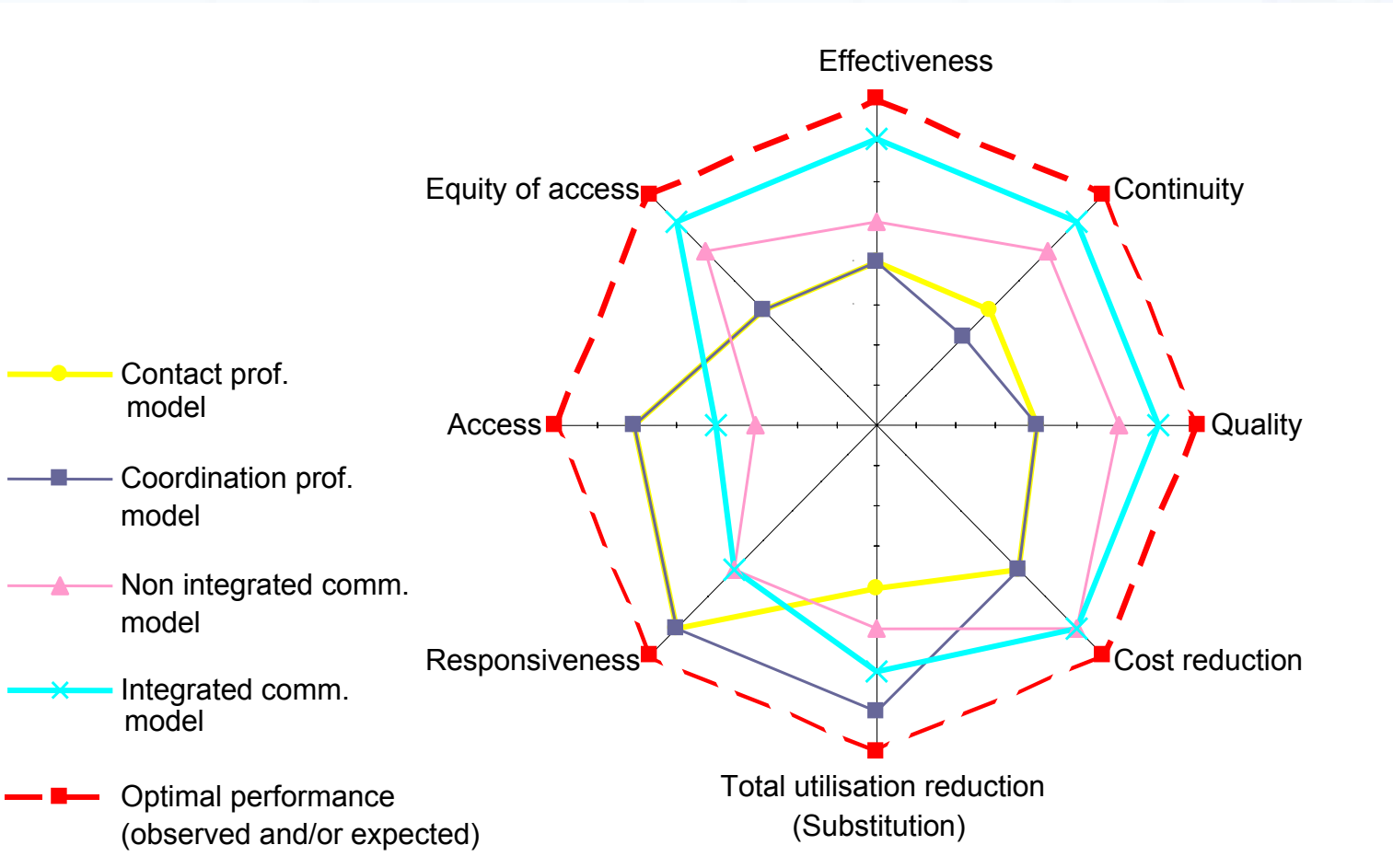


Integration of empirical data and expert opinions – Effectiveness

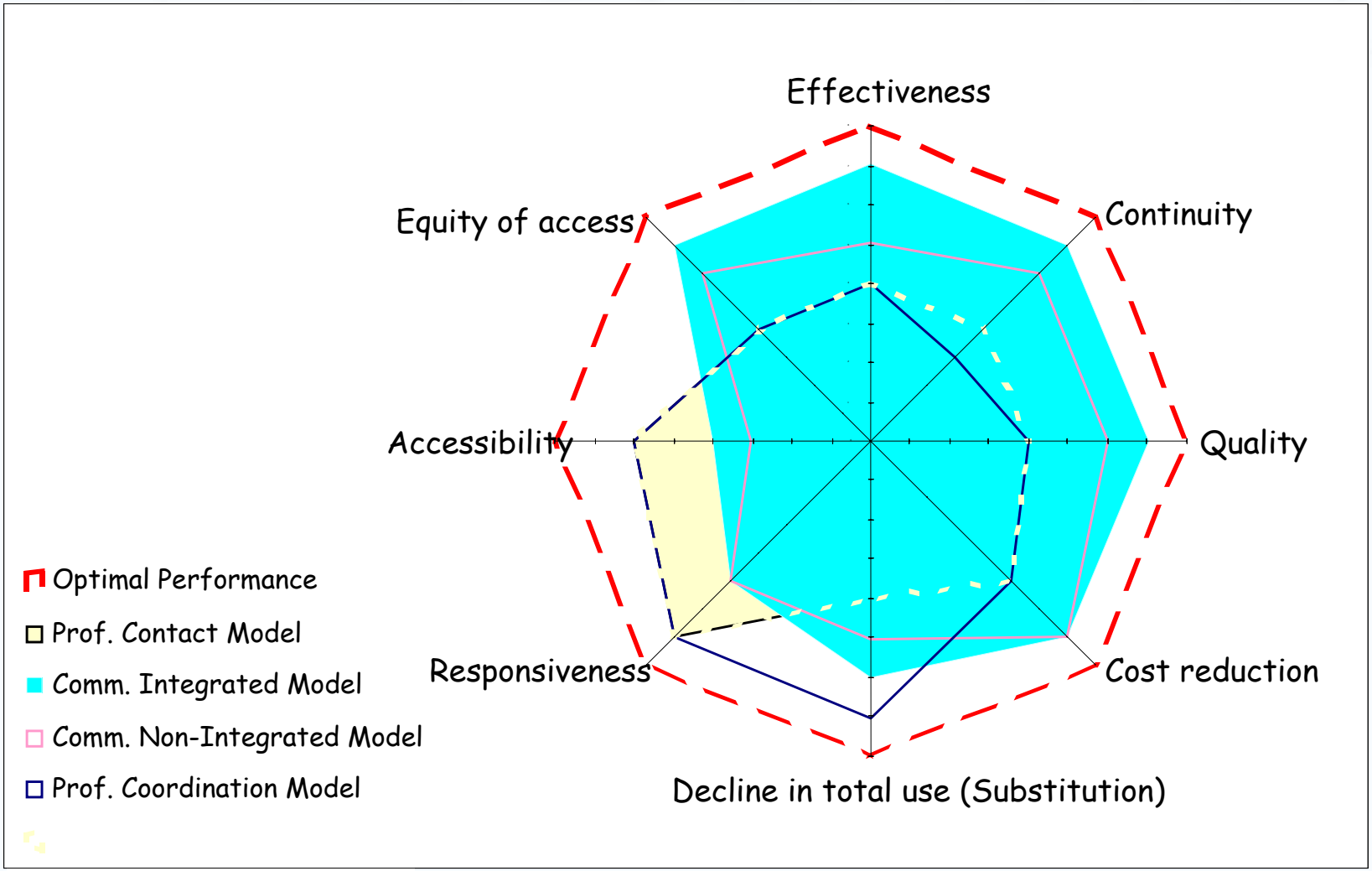
	Model								
	Professional					Community			
	Contact		Coordination			Non-integrated		Integrated	
	ED	EO	ED	EO		ED	EO	ED	EO
EFFECTIVENESS	=	=	=	+		++	=	++	++
Health	=	=	=	+		+	=	+	++
Service	=	=	+	+		++	+	++	++
Validity (IE)			(++,++)			(+,+)		(+,+)	
Rank (score)	4(=)		3(=+)			2(+=)		1(++)	
Influence of expert opinions	*Confirmation*		*Potential*			*Mitigation*		*Accentuation*	
						Differentiation			

ED: empirical data
EO: expert opinions

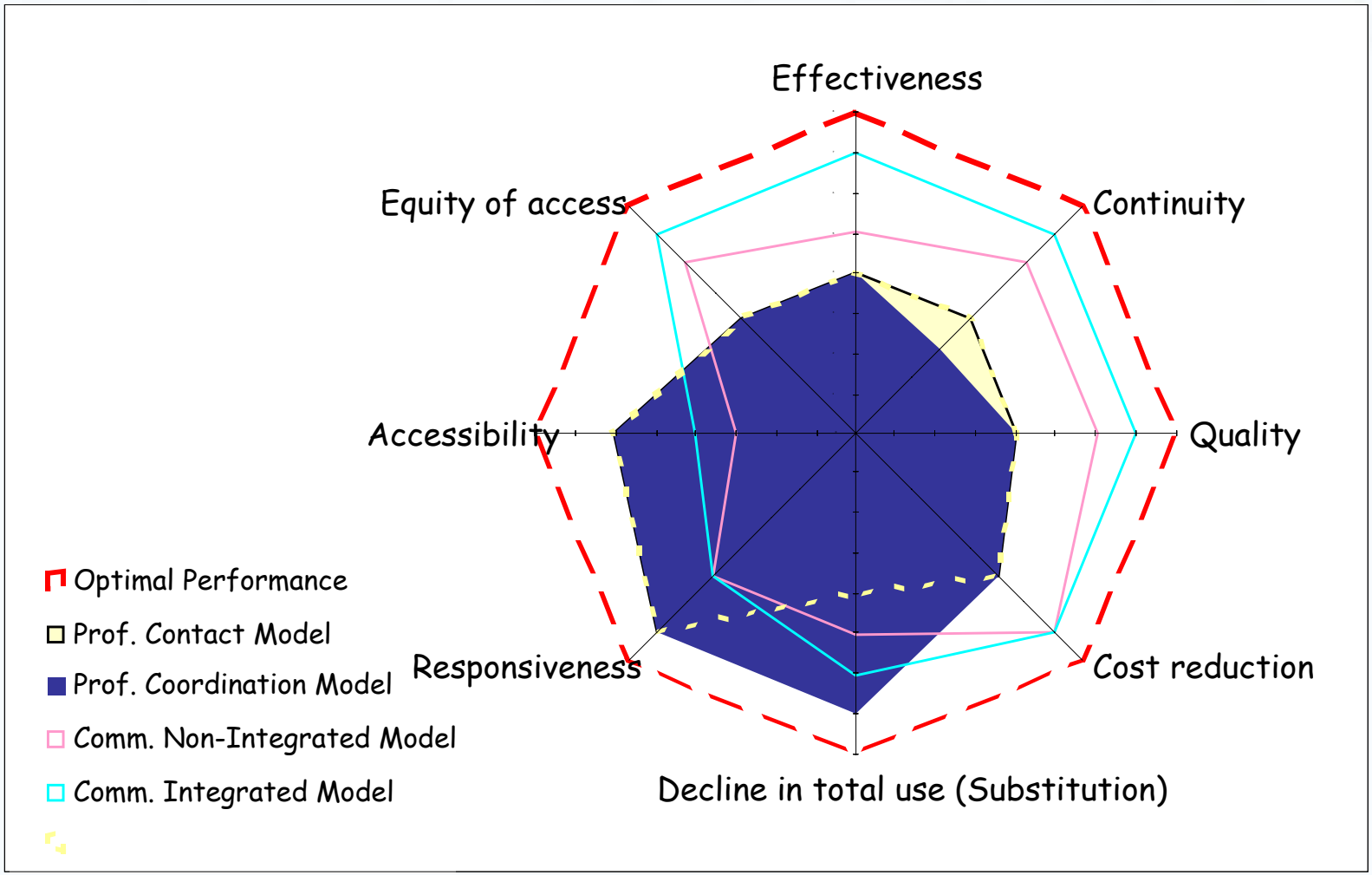
Optimal configuration of outcomes



Optimal combination of models



Combination of models in a professional vision



Conclusions

1. Synthetizing when the intervention variable is complex such as an organization requires a great deal of conceptualization and its operationalization is best achieved through the use of a configurational approach.

2. The dominant paradigm remains quantitative, tha is the bulk of the literature in evaluation remains quantitative in nature; hence qualitative elements have a role that is complementary and subsidiary to quantitative ("enhancement" rather than "difference" role)

Conclusions (cont'd)

3. A method combining both quantitative and qualitative criteria seems to be appropriate for synthesizing the literature in health care and contributes to increase the strength of evidence
4. The coupling of the two approaches increases both internal and external validity and the explanatory capacity of the synthesis, by revealing the fine processes involved in organizations and their relationships with effect indicators.
5. As a corollary, the results yielded by such analyses are likely to be more useful and more convincing for decision and policy makers.