

Research Cycle and SRQ

RSM 321 (Lecture 4)

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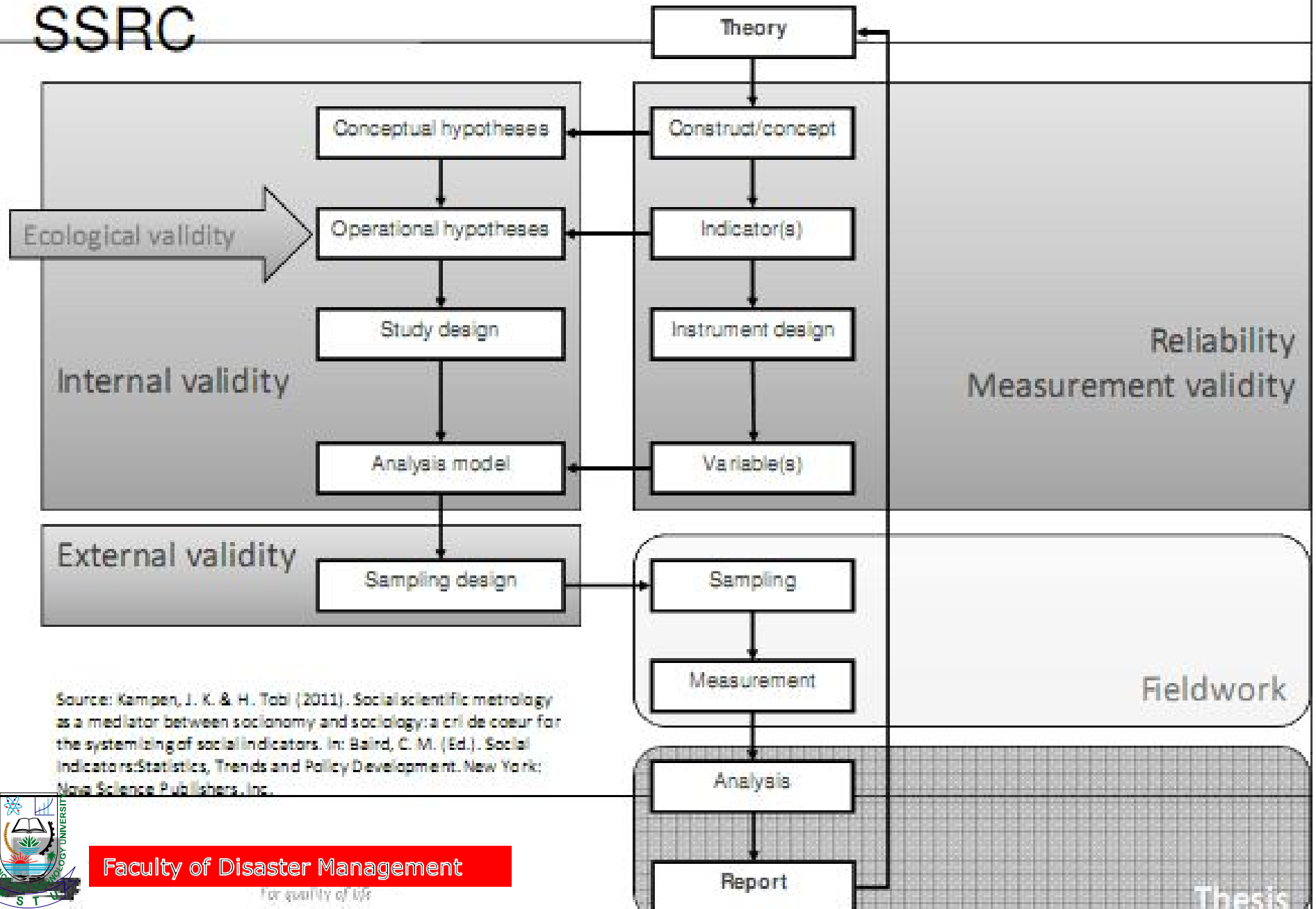
Outline

- ❖ Research cycle
- ❖ We will learn how to formulate a set of adequate specific research questions



Scientific research cycle

SSRC



Source: Kampen, J. K. & H. Tobl (2011). Social scientific metrology as a mediator between sociology and sociology: a cri de coeur for the systemizing of social indicators. In: Baird, C. M. (Ed.). Social Indicators: Statistics, Trends and Policy Development. New York: Nova Science Publishers, Inc.



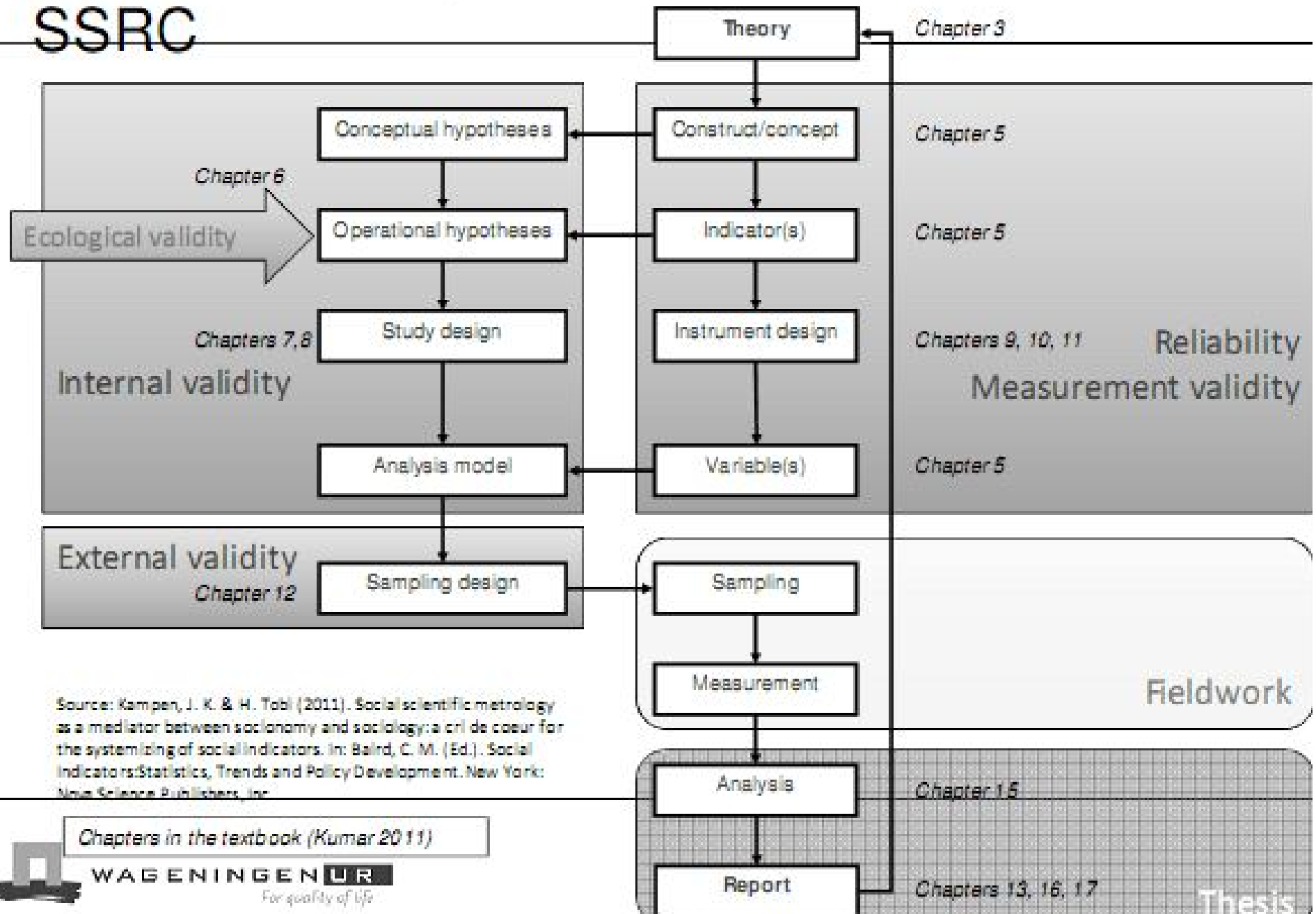
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Thesis

Scientific research cycle

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Chapters in the textbook (Kumar 2011)



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How to arrive at your specific research question(s)



Three tools:

1. Conceptual framework
 2. Path diagram
 3. Tree diagram
- *Some of these tools are also useful to arrive at general research questions from a given research objective*





Tool 1: Conceptual framework

- A theoretical framework includes all theories on the topic of interest.

- A conceptual framework is a selection of these theories that are relevant to your research.
 - Often research problems and general research questions contain theoretical concepts.

 - Literature about the theoretical concepts will give indications for the specific research questions you could ask





Tool 1: Conceptual framework

- Step 1: Select key concepts in your research question
- Step 2: Do a systematic analysis of existing literature covering the key concepts
- Step 3: Identify the commonly used definitions of the key concepts
- Step 4: Formulate specific research questions



Tool 1: Conceptual framework, Example 1



- GRQ: How do heavy metals (pollutants) accumulate through the food chain of the hedgehog (Erinaceus Europaeus)?



Tool 1: Conceptual framework, Example 1



'Food chain of the hedgehog'

- Prey of the hedgehog
- Food of the prey of the hedgehog



Tool 1: Conceptual framework, Example 1



- GRQ: How do heavy metals (pollutants) accumulate through the food chain of the hedgehog (Erinaceus Europaeus)?

SRQ1: What pollutants are accumulated in the hedgehog?

SRQ2: What pollutants are accumulated in prey of the hedgehog (such as slugs, snails, insects, insect larvae, beetles, earthworms and fallen fruit)?

SRQ3: What pollutants are accumulated in grass, shrubs, trees etc. that the prey of the hedgehog feed on?





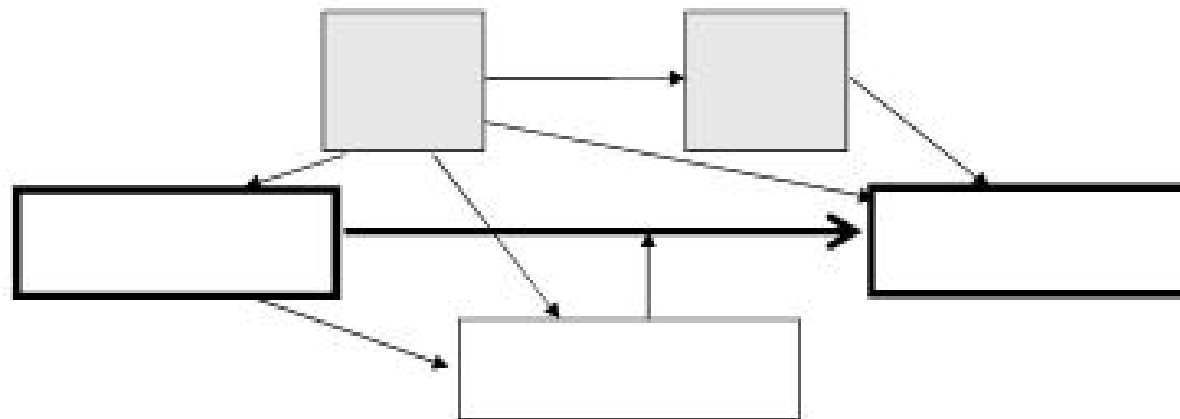
Tool 2: Path diagram

- A path diagram: graphic representation of direct and indirect relationships of concepts, e.g., $X \rightarrow Y$. These diagrams can include direction of the relationship
- Positive relationship: increasing values of X correspond to increasing values of Y
- Negative relationship: increasing values of X correspond to decreasing values of Y





Tool 2: Path diagram



- Step 1: Select key concepts in your research question
- Step 2: Find the basic cause-effect relationship(s) and explain whether the relation is 'positive' or 'negative'
- Step 3: Find intermediate relationships
- Step 4: Formulate specific research questions

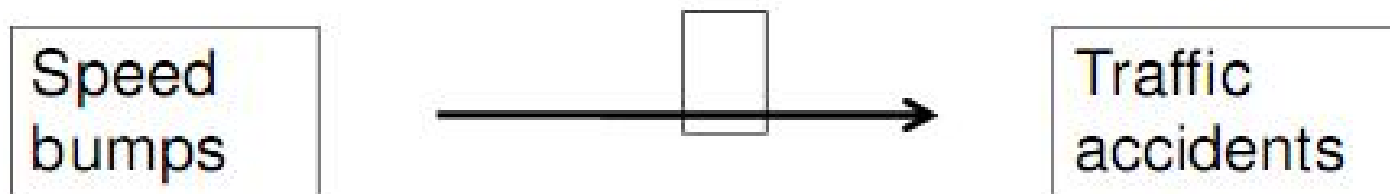




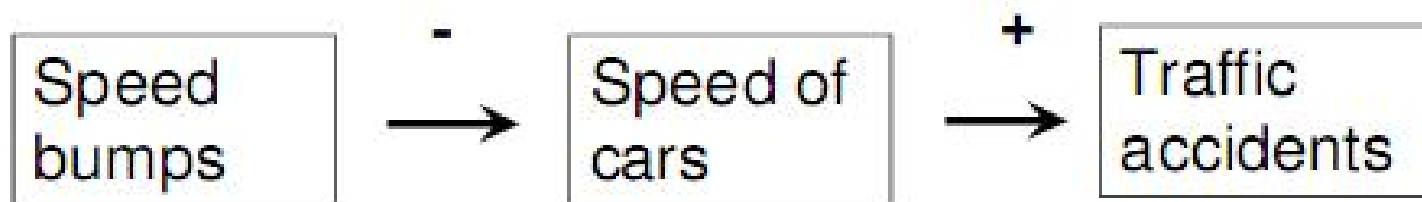
Tool 2: Path diagram, Example

GRQ: What is the effect of speed bumps on traffic accidents in a neighbourhood?

- What is the basic cause-effect relationship?



- Find intermediate effects





Tool 2: Path diagram, Example



- GRQ: What is the effect of speed bumps on traffic accidents in a neighbourhood?
 - SRQ 1: What is the effect of speed bumps on the speed of cars in a neighbourhood?
 - SRQ 2: What is the effect of the speed of cars on traffic accidents in a neighbourhood?





Tool 3: tree diagram

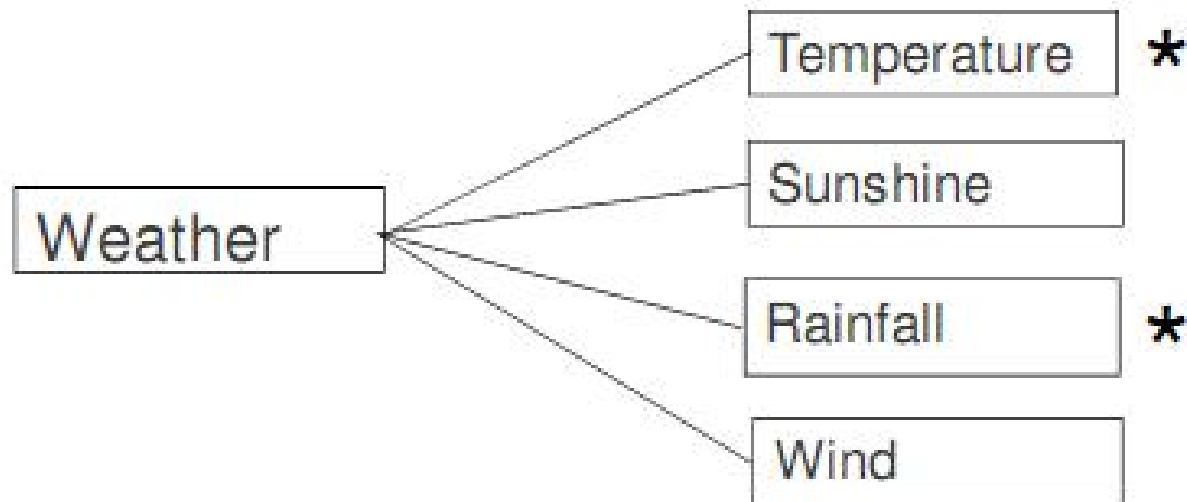
- Categories of elements/aspects
 - should be internally homogeneous
 - should be mutually exclusive
 - should be exhaustive
 - should not be causes or effects
 - should not include values, e.g. low, medium, high level of pollution





Tool 3: Tree diagram, Example

GRQ: What are the characteristics of the weather in the Netherlands?



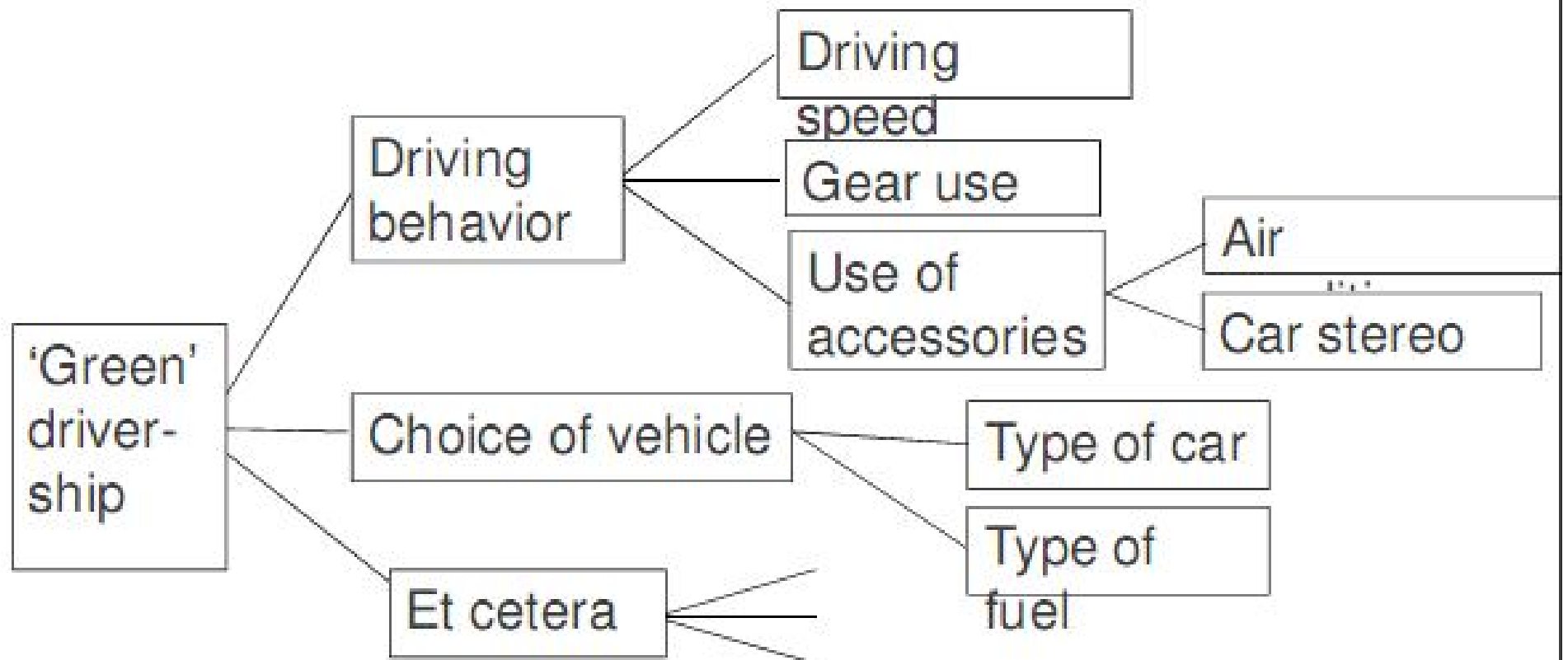
- SRQ 1: What is the mean year temperature?
- SRQ 2: What is the average amount of rain per year?





Tool 3: Tree diagram

■ Another example:





Tool 3: Tree diagram, Example

General research questions	Key concepts
- What is the influence of crop rotation on soil erosion?	soil erosion, crop rotation





Exercise: Tree diagram

- Make an overview of all key concepts in your general research question(s)
- Select the most important key concept
- Split up this key concept in aspects or components by means of a tree diagram
- Select aspects of interest and formulate specific research questions about these





Common mistakes in initial research questions...

- Overly ambitious
 - Questions are too broad/varied/numerous
 - Questions involve the complete regulative cycle
- Objective, GRQ and SRQ are not coherent/consistent
 - General questions expand, reduce, or are unrelated to the objective
 - Specific questions expand, reduce, or are unrelated to the general question
- Questions are not researchable
 - Questions are not aimed at gaining knowledge but at changing reality (*'how can we solve hunger/pollution/criminality/insanity/...'* questions)
 - Questions are in fact *desk decisions* (the research program is limited to looking up definitions in wikipedia, e.g., 'What is environmental pollution'?)



Advice for effective group work

- Respect for each other
 - Listen to everyone's ideas
 - Reserve time for group meetings and be on time
 - Stick to agreements (know your limits)
- Open, honest, and clear communication
 - Organization: make appointments, set deadlines
 - Time management: keep on task
 - Task division: plan, share the work equally
- Accountability: trust, but verify
- Communicate any problems to your lecturer as early as possible



Thank YOU



Questions??



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