Good practices in driver training and testing

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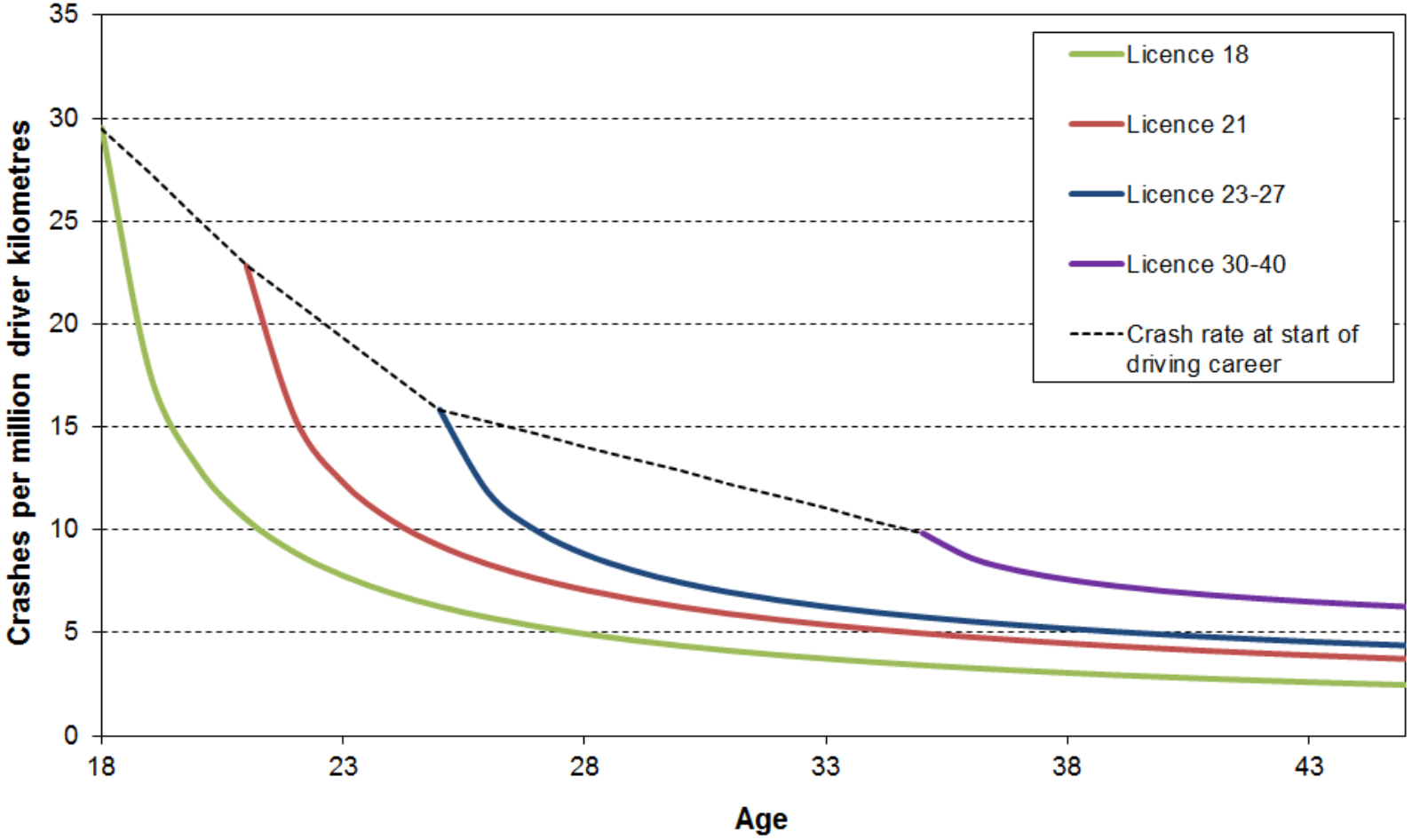
ROAD SAFETY RESEARCH

Content

- Why are newly licenced drivers overrepresented in crashes?
- What do we know about the effectiveness of initial driver training?
- What do we know about the effectiveness of driver testing?
- Good driver training practices.
- Good driver testing practices.

A matter of inexperience and age



Vlakveld, 2011

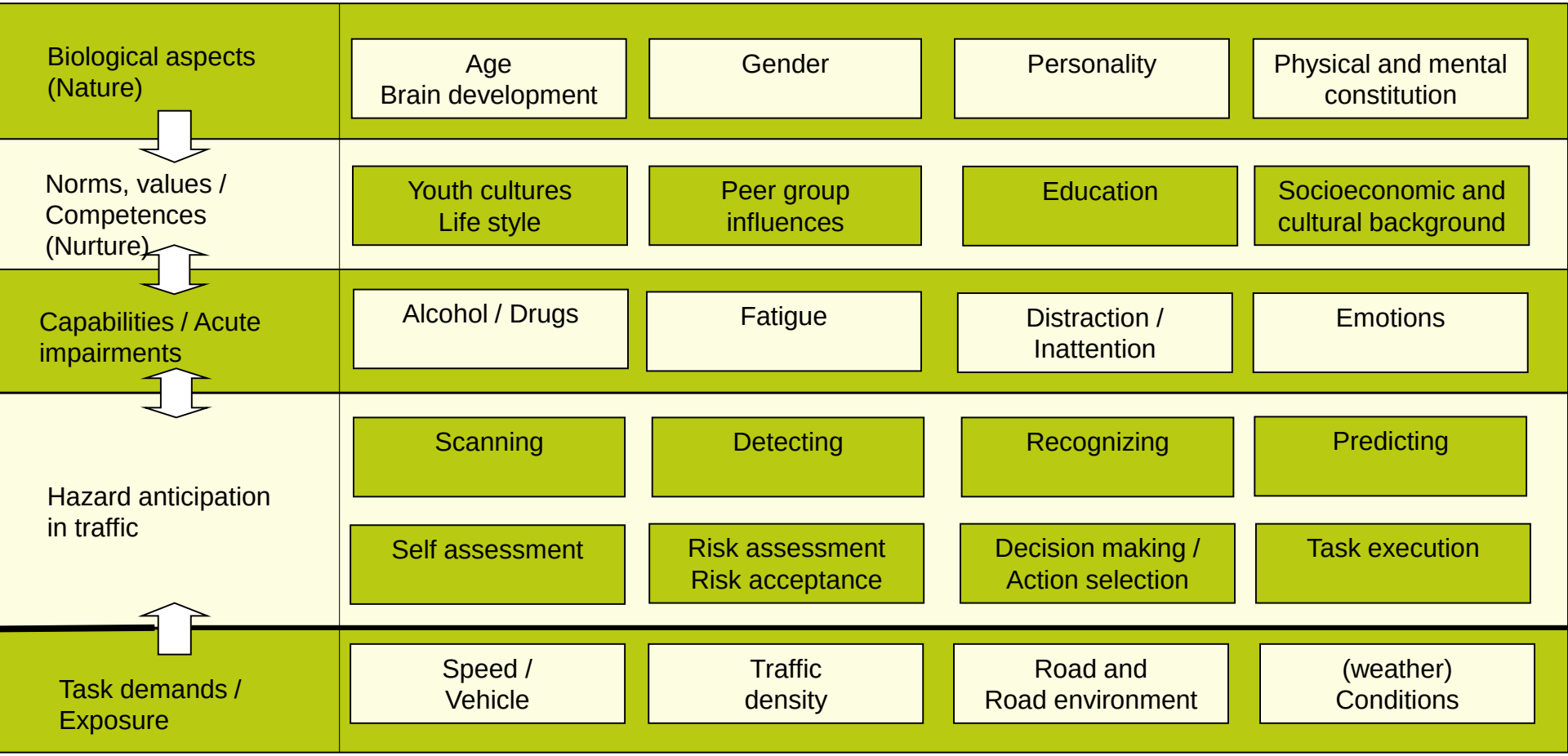
Newly licenced drivers are overrepresented in:

- Single vehicle crashes
- Vehicle-vehicle crashes
  - Head-on collisions
  - Rear-end collisions
- Crashes at intersections
- Crashes in bends

Direct causes:

- Poor hazard detection (Do not know what to expect and where to look)
- Inattention/distraction (e.g. use of smartphones while driving)
- Driving too fast for the circumstances (e.g. in bends)
- Somewhat later in driving career: deliberate risk taking (e.g. speeding)

Indirect causes (determinants):



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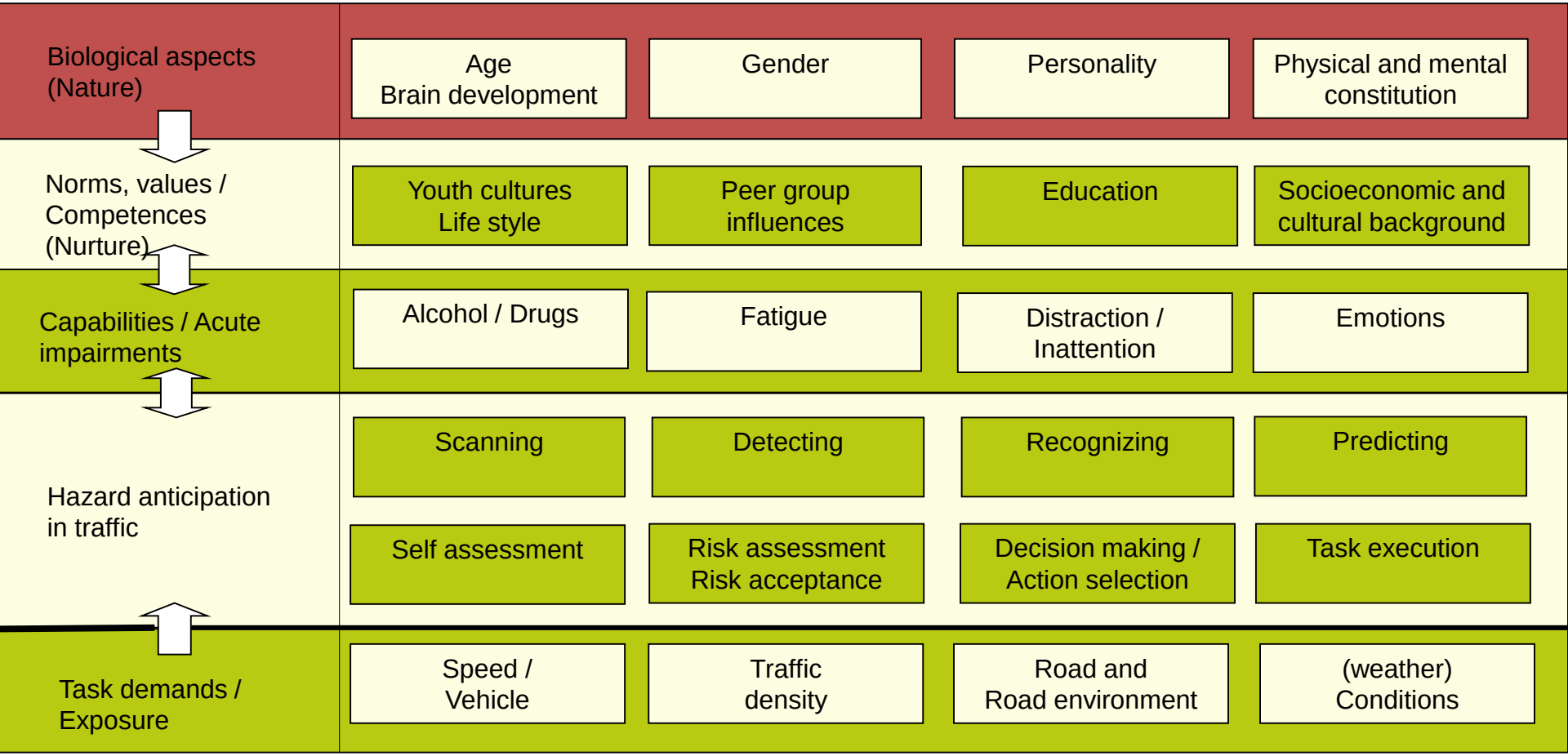

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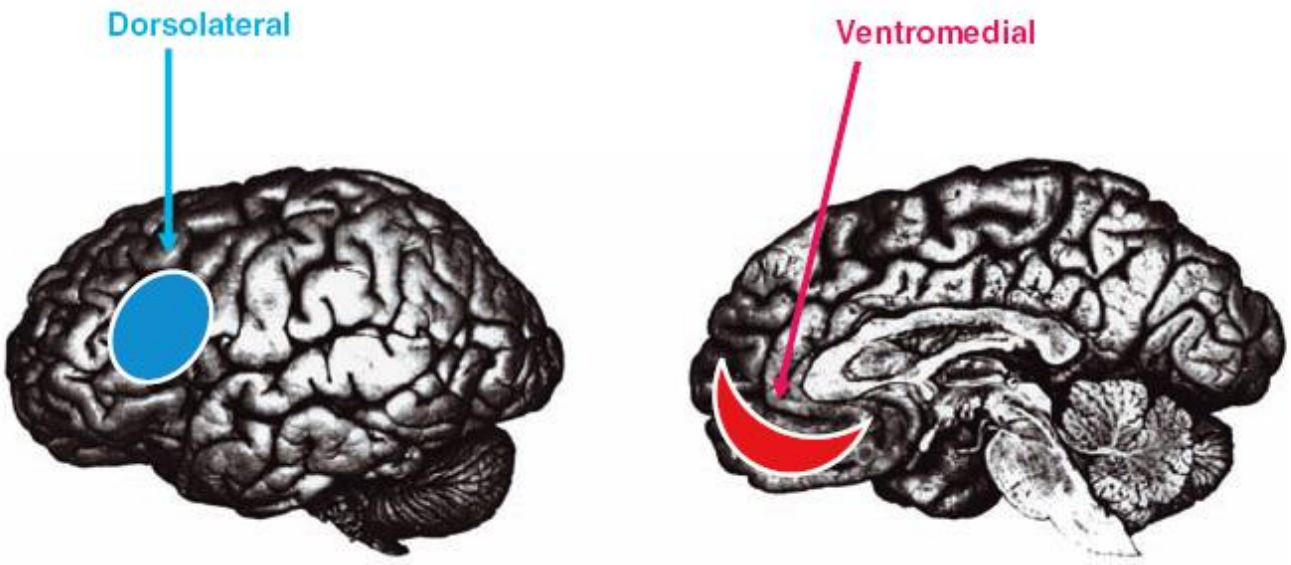
Brain development



Thinking ahead and inhibition of impulsive responses

Regulation of emotions; learning from experience; weighing risks and rewards

Brain development

Adolescents:

- Less risk avers;
- Less loss avers;
- Power of friends;
- Preference for immediate reward, and
- Planning ahead is difficult.

Groups particular at risk due to biological aspects:

- Young males;
- Young drivers that score high on sensation seeking (dopamine);
- Young drivers with (untreated) ADHD.

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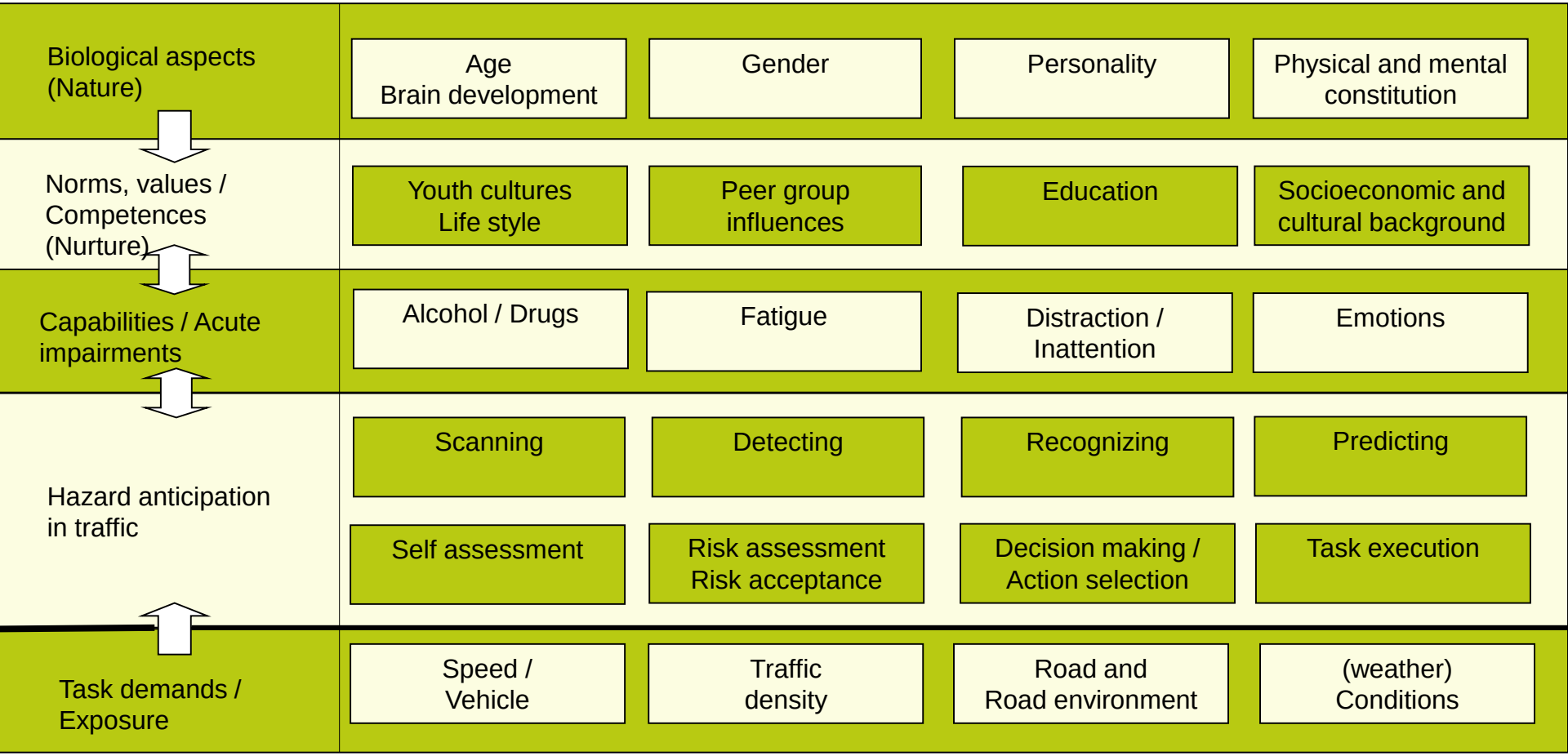

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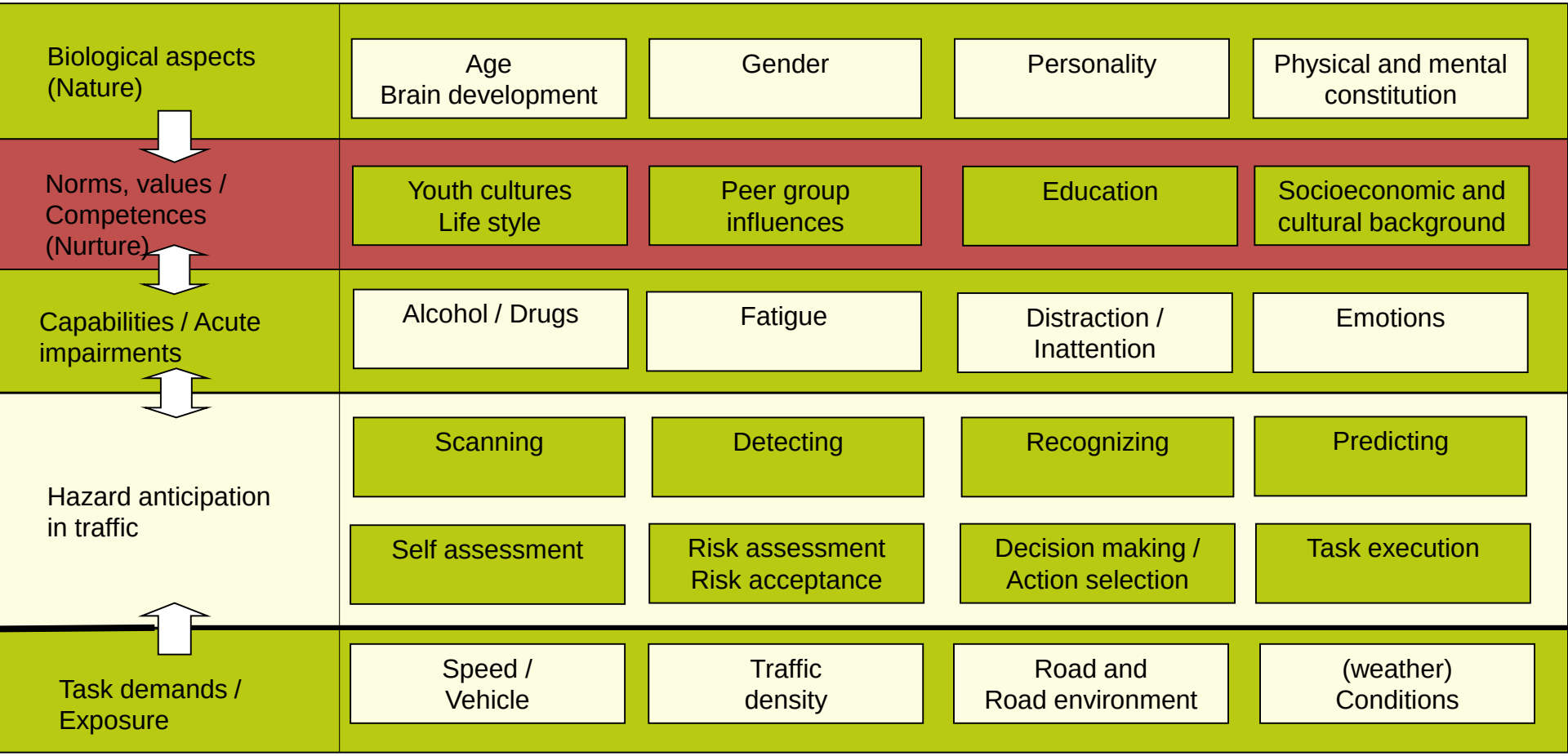

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Peer influences

- Young male driver with young male passenger→ *highest* crash rate
- Young male drive with young female passenger→ *high* crash rate
- Young female drive with young male or female passenger→ *high* crash rate
- Young female or male driver with older passenger → *low* crash rate

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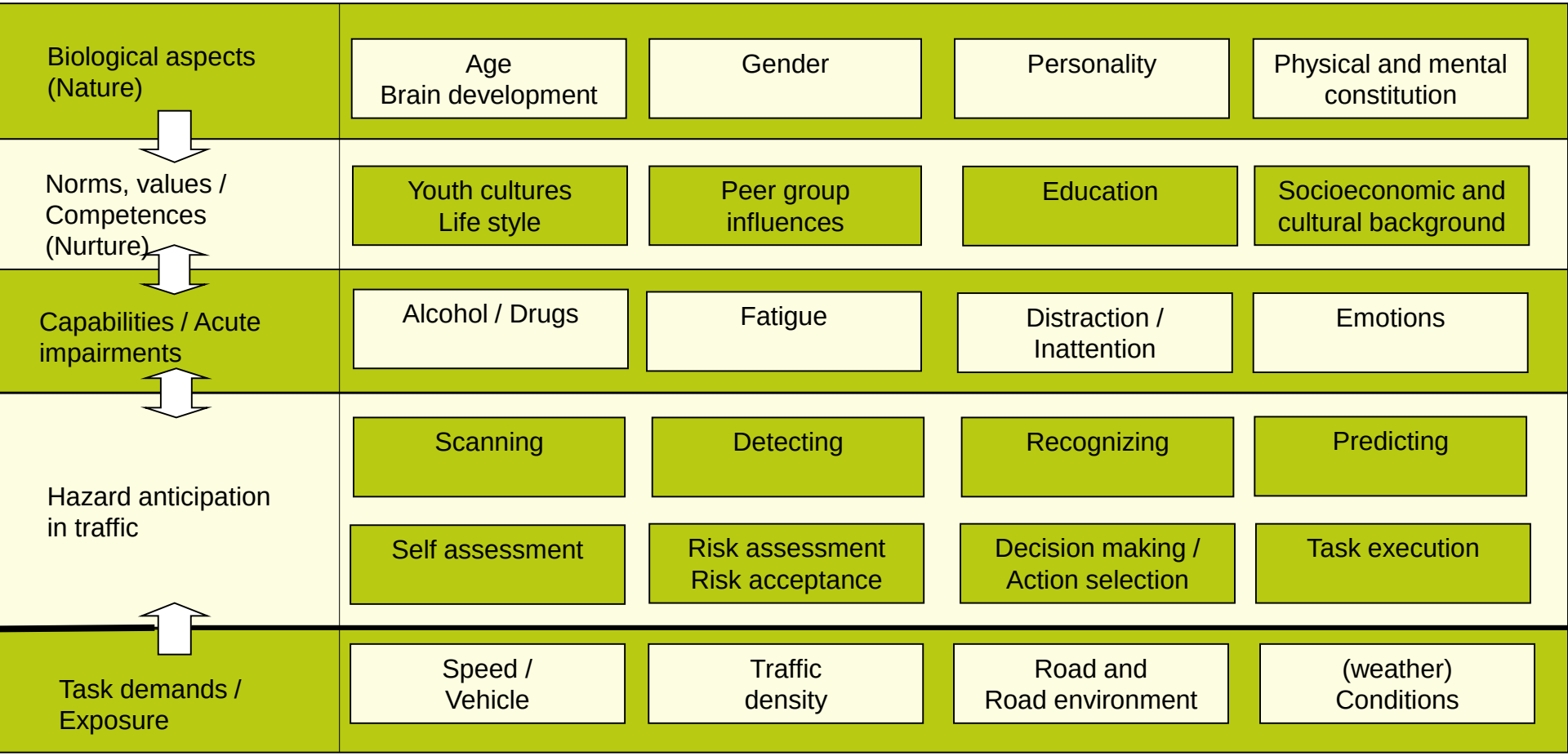

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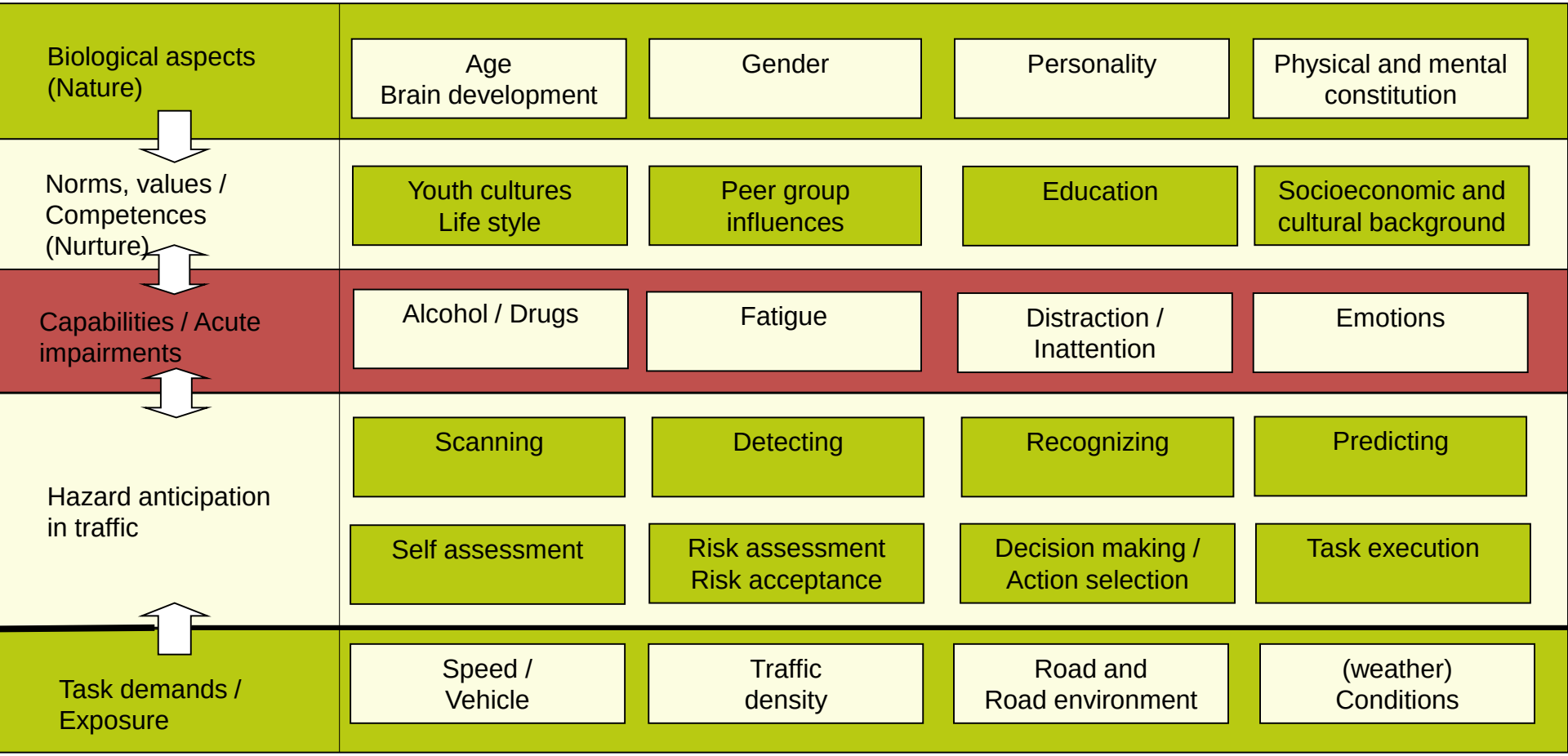

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Distraction

Young novice drivers have more crashes due to distraction than older, more experienced drivers because:

- They more often use electronic equipment (e.g. smart phones) while they drive;
- Secondary tasks interfere more with the driving task as the primary driving task is not yet fully automated;
- They have difficulties in assessing if the conditions are safe enough to encage in a secondary task;
- When engaged in a secondary task, the off road glances are substantially longer.

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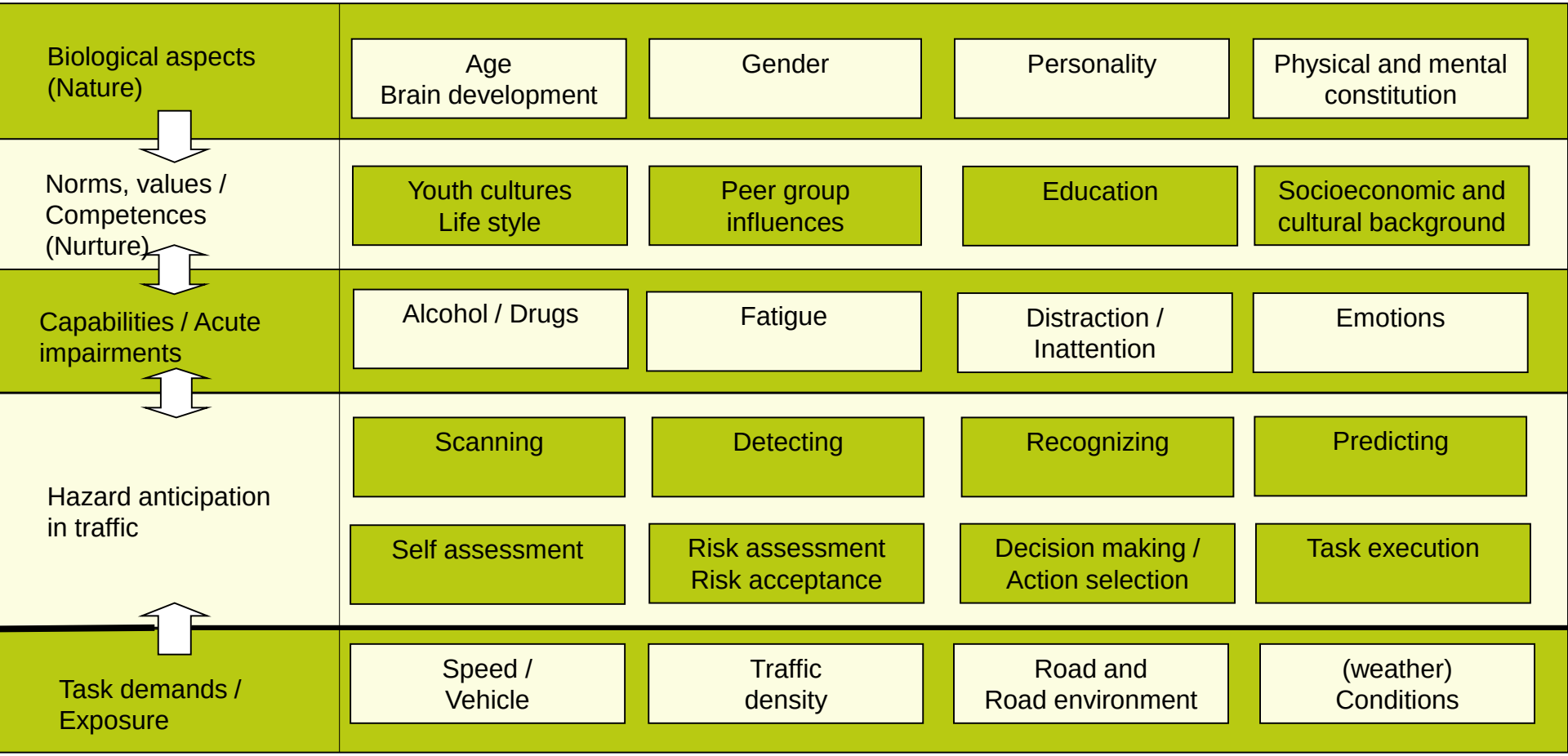

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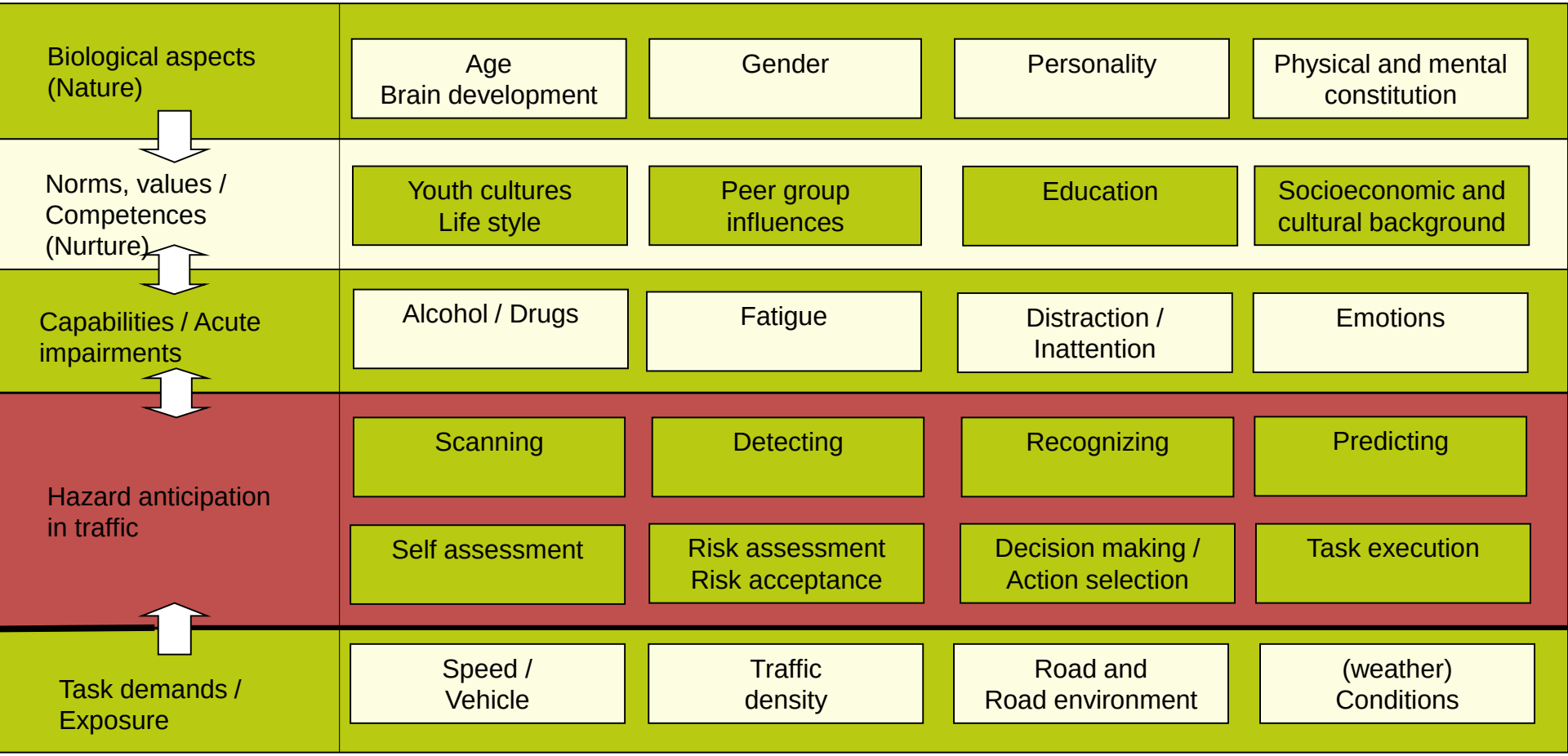

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Hazard anticipation

- Hazard anticipation = hazard perception + risk regulation

- Hazard perception
  - The ability to detect and recognize potential hazards and to predict how these potential hazards can develop into situations in which a crash is very likely.
- Risk regulation
  - The feelings of risk that are evoked by these predictions and the execution of actions that ensure a safety margin that is large enough to avert a crash should the potential hazard materialize.

At least two types of potential hazards

- Overt potential hazards

  Visible other road users who due to the circumstances may start to act dangerously

- Covert potential hazards

  Possible other road users on collision course that are hidden from view

Example of an overt potential hazard

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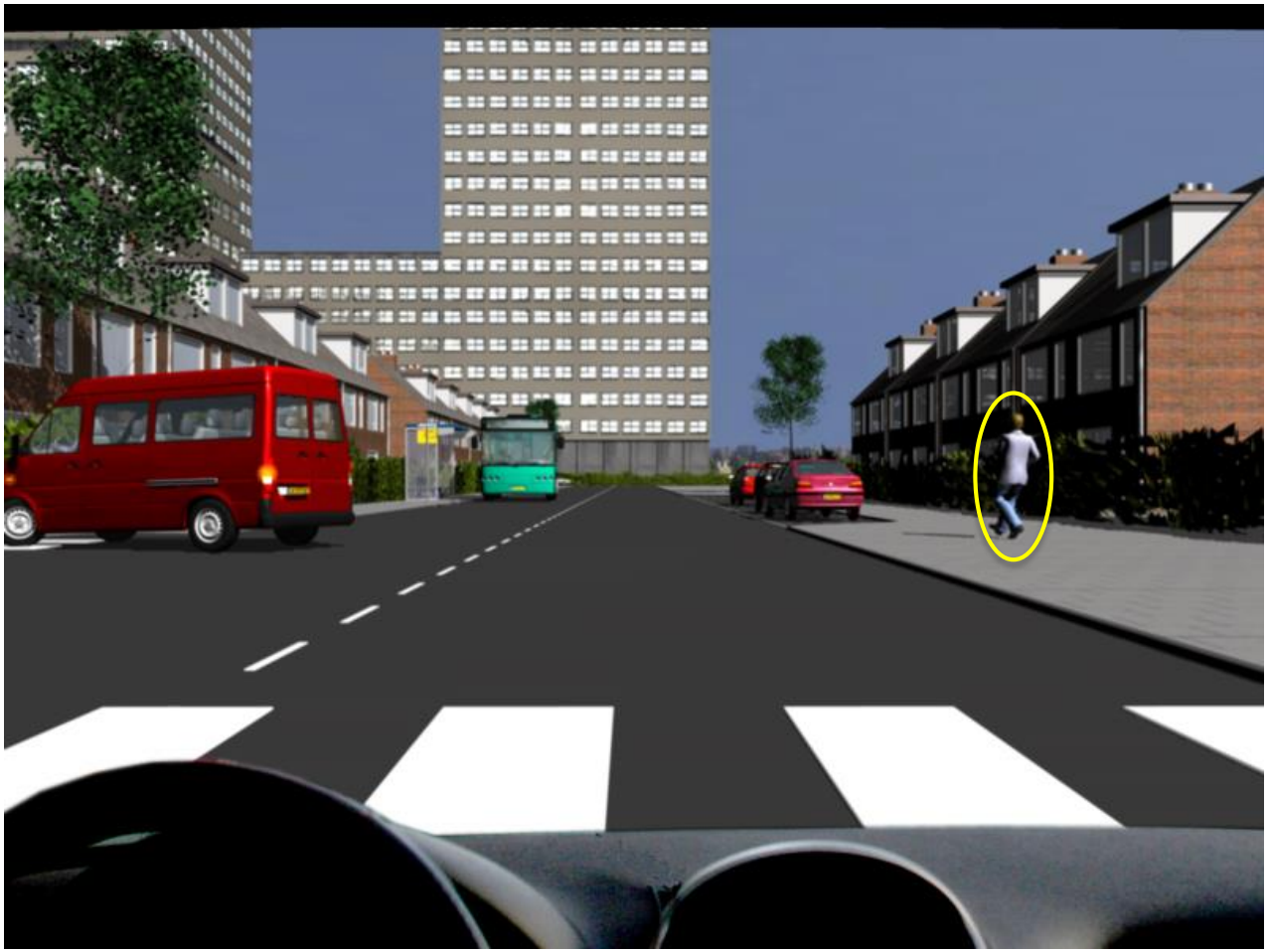
Example of an overt potential hazard



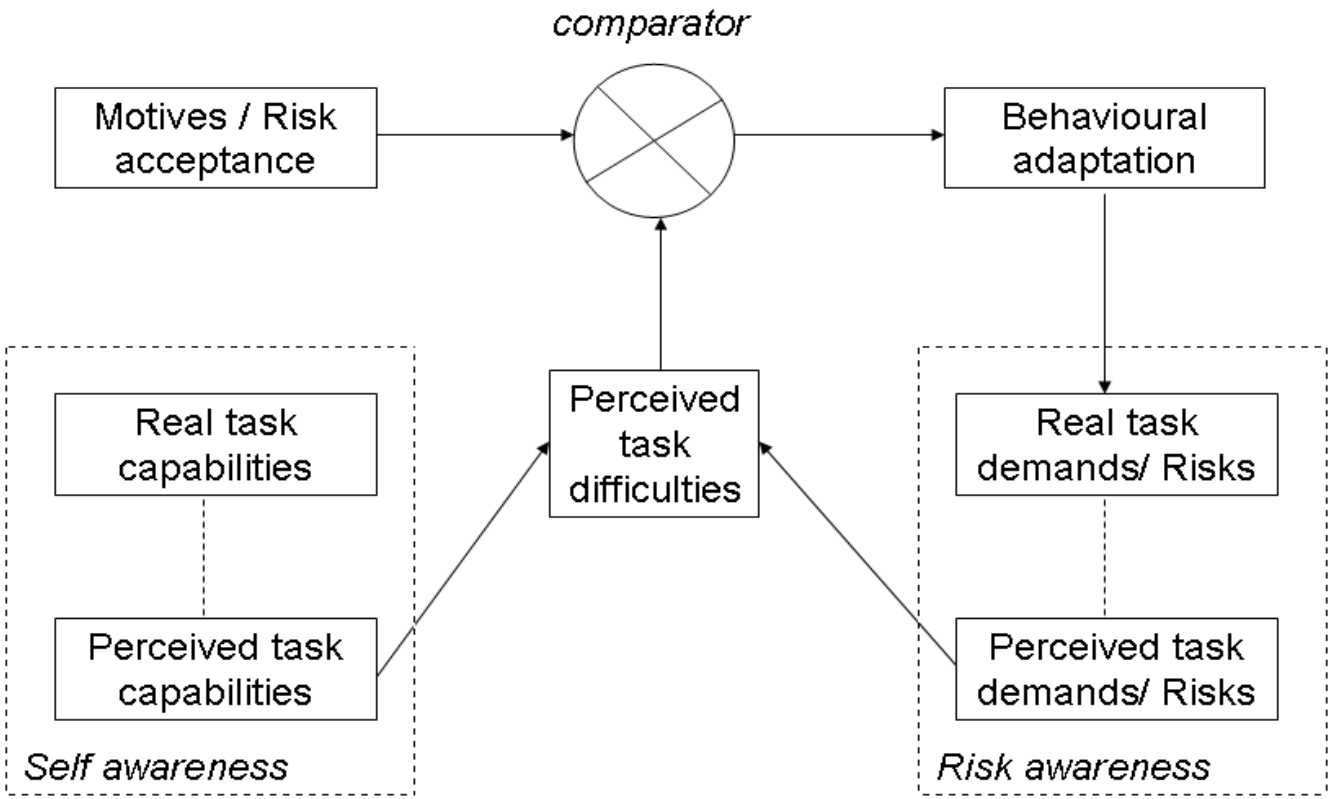
Example of a covert potential hazard

Example of a covert potential hazard

Novice drivers and hazard perception

- Novice drivers have poorer hazard perception skills than experienced drivers
- Hazard perception skills predict crash involvement
- Hazard perception skills can be trained

Risk regulation / Calibration



Novice drivers and calibration

- A substantial proportion of the novice drivers tend to overestimate their own skills, tend to underestimate the risks, and tend to accept high levels of risk

- Calibration and the motivation to drive safely can be educated (e.g. in post licence training)

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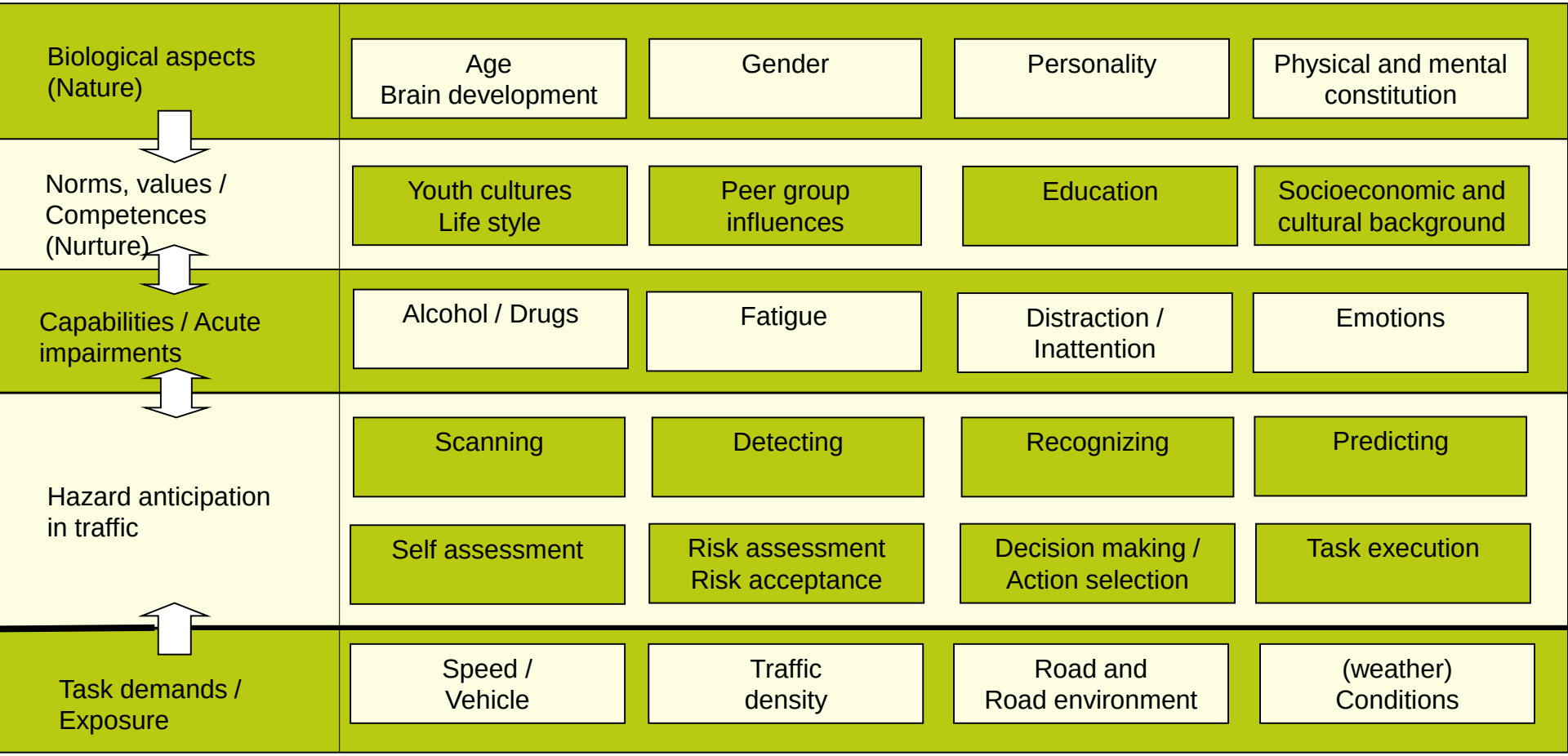

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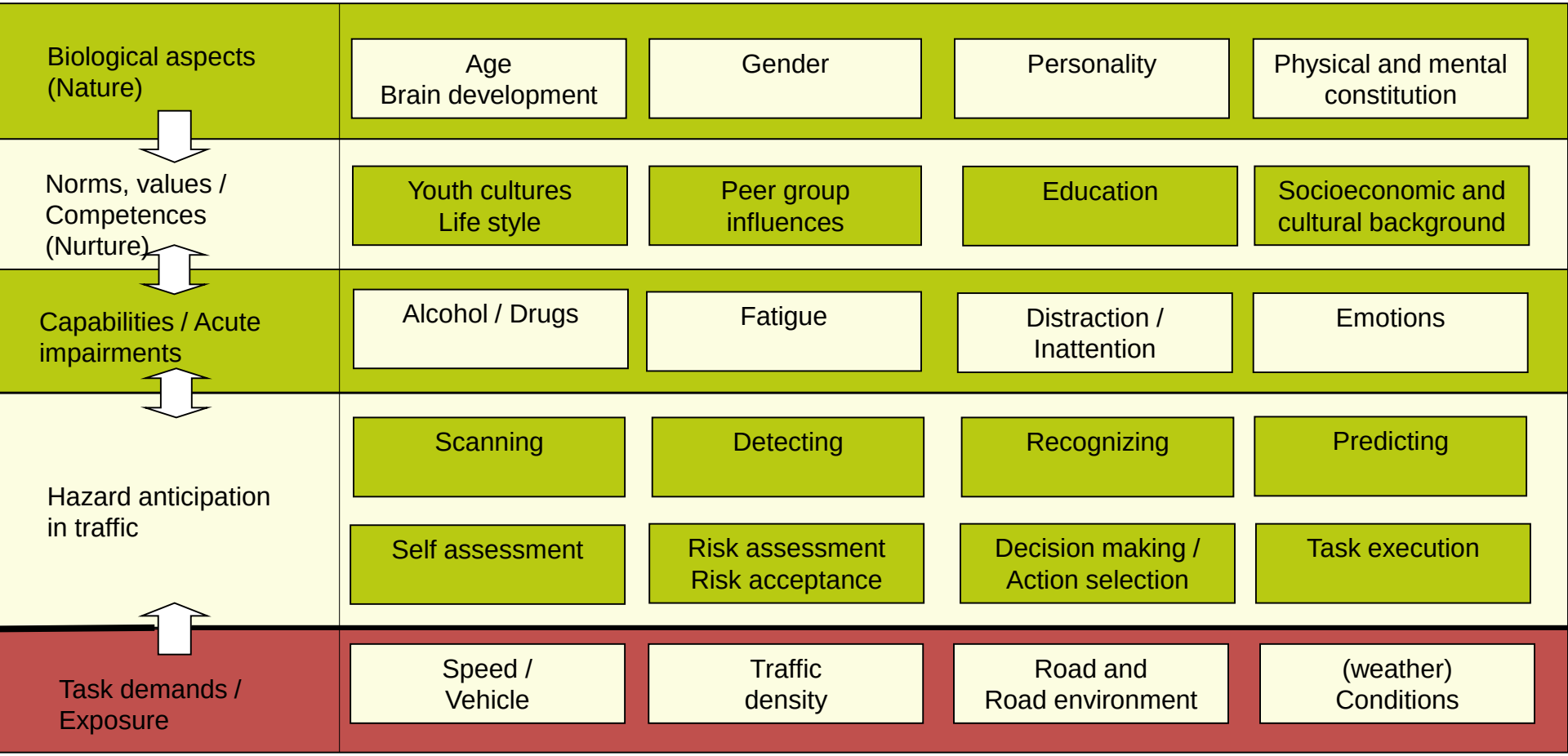

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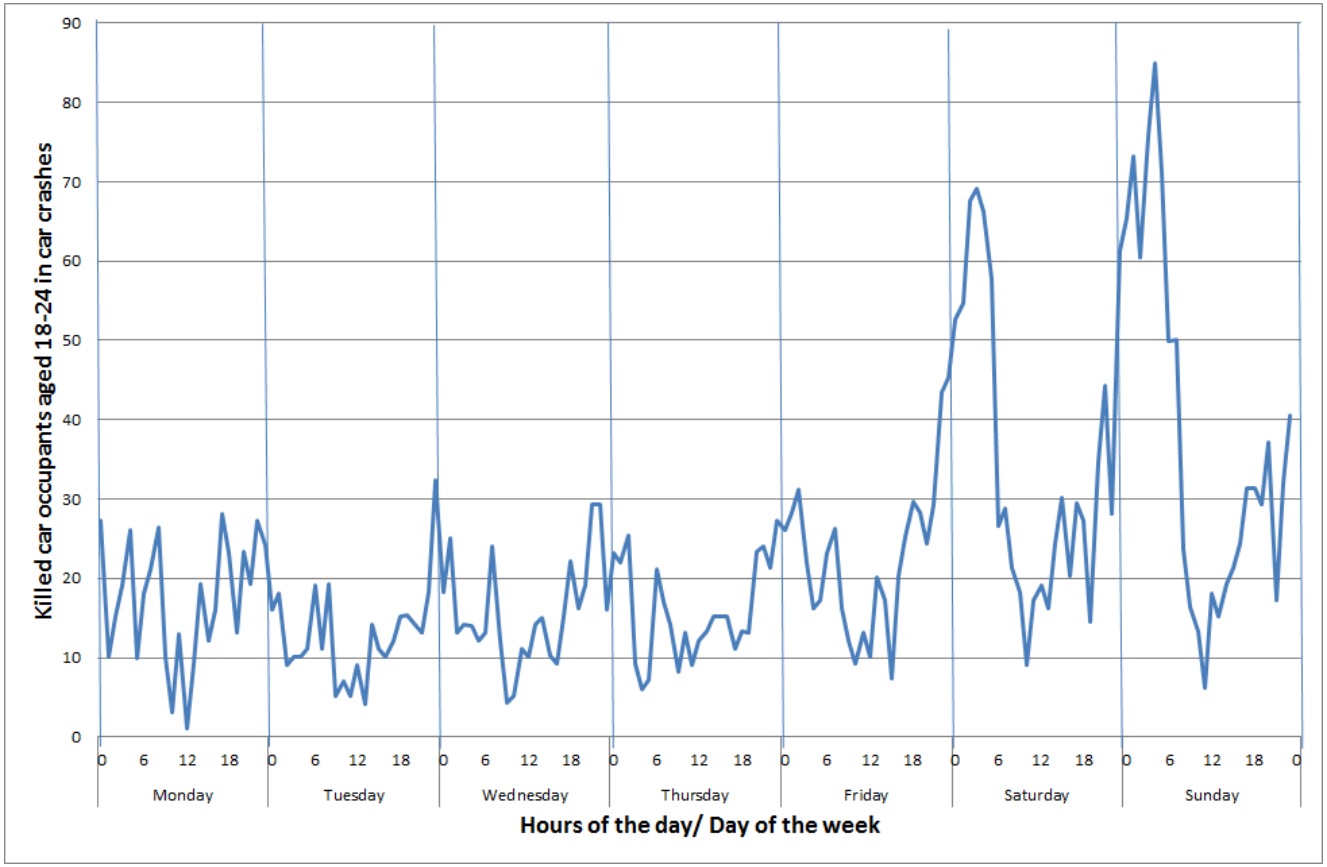
Killed young car occupants (18-24) in Member States by day of the week and time of day



Source: CARE, EU Road accident Database

Determinants, driver training and driver testing

- Can basic driver training tackle all mentioned negative determinants?

- Can the on road driving test and the theory test select the drivers with positive determinants?

Driver training

- Driver training is any kind of effort by teaching and learning aimed at increasing driving skills and the motivation to use these skills in safety-enhancing ways.
- Formal and informal training
- To become an experienced practice (informal training) is required and probably also formal driver training is required.

What do we know about traditional basic driver training?

- No evidence that basic driver training that is solely intended to pass the driving test results in a lower crash rate after licencing.
- Quite strong indications that hazard perception training reduces the crash rate after licencing.
- Some indications that risk awareness training and self awareness training (calibration training) reduces crash risk.
- Short training programs to enhance the skills in emergency situations (e.g. skid training) have no effect on crash risk and can even increase crash risk.

Goals for Driver Education 1999

	GDE-matrix		
	Knowledge & Skills	Risk-increasing factors	Self-evaluation
1. Goals for life and skills for living	Lifestyle, group norms, motives, personal values	Risk-acceptance, sensation-seeking, group norms, peer pressure	Impulse control, awareness of safety negative motives, awareness of own risky habits
1. Goals and context of driving (trip related)	Modal choice, route choice, awareness of peer pressure in the car	Alcohol, fatigue, distraction, extra motives (e.g. impress peer passengers)	Self-awareness of own limitations and awareness of risks of alcohol, fatigue, peer pressure, et cetera.
1. Mastery of traffic situations	Applying rules of the road, hazard anticipation	Disobeying rules, close following, information overload, no attention for vulnerable road users	Calibration skills (not overestimating one's own competences and not underestimating the risks)
1. Vehicle maneuvering	Car control, knowledge of protection systems	Not fully automated vehicle handling skills, No seatbelts, poor vehicle maintenance	Calibration of car control skills

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Suggested good driver training practices

- A national curriculum that prescribes minimum hours of tuition (behind the wheel and theory lessons) and that prescribes lessons in subjects that are important for safe driving but are difficult to test or even cannot be tested during the driving test
- Inclusion of hazard perception training in basic driver training
- A curriculum that takes into account the changes in the driving task due to technological developments (e.g. driving with adaptive cruise control)
- A learning pathway in which formal training and informal training are intertwined
- No short mandatory skill training programs in skills that are rarely required and that erode quickly (e.g. skid training)

Driving Test

- Primary aim is selection: Only those drivers that meet the minimum standards are allowed to drive on public roads

- Tests have to be valid (Do for instance drivers with good test results have a lower crash rate than drivers with poor test results?) and reliable (Do for instance two independent driving examiners assess skills of the same candidate similarly?)

- The motivation to drive safely cannot be tested and calibration skills are difficult to test.

Suggested good practices regarding the driving test

- Inclusion of a hazard perception test in the licencing system;
- Different tests that are linked to different phases in a graduated driver licencing system;
- An on road driving test that incorporates different road types (urban roads, motorways, rural roads) and different circumstances (day time and night time driving);
- Driving with modern equipment (navigation systems, lane keeping systems, adaptive cruise control, et cetera).