Young Driver Profile

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# Overview of Presentation

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Reported road casualties

- Twenty-five percent of fatal accidents involve a car driver aged between 17-24 years.

- Almost 46,000 16-24 year old car drivers were reported to have been crash involved in 2009 in the UK. Fifty-five percent of these crashes resulted in the driver being recorded as a casualty.

- A fifth of all car occupants killed or seriously injured in 2009 were young car drivers.

- Novice drivers are amongst the most vulnerable of road users with 1 in 5 experiencing an accident within their first year of driving.

- Young drivers account for 10% of the driving population, but are involved in around 30% of all accidents.

Proportion of young drivers involved in fatal accidents

Causes of death in OECD countries

Traffic fatalities vs. overall fatalities by age

Selected OECD countries, most recent data
Source: WHO
## Influences on young novice driver crash risk

**What research tells us**

<table>
<thead>
<tr>
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<th>Physical &amp; Mental Development</th>
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<tbody>
<tr>
<td>Age</td>
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<tr>
<td>Lack of experience</td>
<td>Poor Hazard Perception</td>
</tr>
<tr>
<td>Gender</td>
<td>Expression</td>
</tr>
<tr>
<td>Over-confidence in abilities</td>
<td>Thrill seeking</td>
</tr>
<tr>
<td>Lifestyle and social attitudes</td>
<td>Peer influences</td>
</tr>
<tr>
<td>Alcohol and Drugs</td>
<td>Parents</td>
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Driving in a social context

Driving is a skill-based, socially regulated, expressive activity involving balancing capability and task difficulty to avoid loss of control, along with real time negotiation with co-present transient others with whom the driver is presently sharing the public highway to avoid intersecting trajectories, while maintaining or enhancing the driver’s mood and self-image.

Prof. Steve Stradling
Expressive activity: Transport into the adult realm

‘Driving a car …’

- Is a way of projecting a particular image of myself
- Gives me a feeling of pride in myself
- Gives me the chance to express myself by driving the way I want to
- Gives me a feeling of power
- Gives me the feeling of being in control
- Gives me a feeling of self confidence
- Gives me a sense of personal safety

Automobile = Autonomy + Mobility

“Instead of using public transport you get to use cars.”

“It’s going to be purple and hopefully a Skyline but I don’t have a lot of money.”

“Nice silver shiny car. It has to be shiny.”

“Like you’re in control of loads of speed”

“It would just be great, just the total feeling of freedom.”

“Windows down, music blaring and just going up and down the street.”

“Not relying on your parents all the time”

“It gives me independence. Be able to go where I want when I want.”
The effect of passengers

Source: Chen et al (2000), US
Factors that influence age related crash risk

- Risk taking
- Sensation seeking
- Brain development and impulsivity
- Crime and antisocial behaviour

Brain development

Why do most 16-year-olds drive like they’re missing a part of their brain?

BECAUSE THEY ARE.
Cognitive Functions of the Human Prefrontal Cortex

Functions involve:

- The ability to recognise future consequences resulting from current actions
- Selective attention
- Anticipation
- Emotion regulation
- Reasoning and decision making
- Processing event sequences
- Adaptiveness to new situations
### Overview of Presentation

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Novice Driver Crash Risk: Age v Experience

Maycock et al (1991)
Australia

Targeting Young Driver Crash Risks

Experience and Crashes – Learners / New Drivers

Source: VicRoads
Two 18 year old male drivers collide at a junction
Minor injuries to the drivers. No passengers.
Intended Paths
## What caused this crash?

<table>
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<tr>
<th>Mechanical Failure</th>
<th>Environmental Influence</th>
<th>Driver Error</th>
</tr>
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<tbody>
<tr>
<td>Fiat front nearside wheel was a space saver</td>
<td>Night time</td>
<td>Speed?</td>
</tr>
<tr>
<td>No other mechanical faults found.</td>
<td>Street lighting</td>
<td>Poor manoeuvre?</td>
</tr>
<tr>
<td></td>
<td>Dry conditions</td>
<td>Failure to interact appropriately with the other road user</td>
</tr>
<tr>
<td></td>
<td>Good visibility</td>
<td>Failure to judge other road user’s intention and behaviour.</td>
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<tr>
<td></td>
<td></td>
<td>Failure to maintain an adequate safety margin.</td>
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Inexperienced Driver

Experienced Driver
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Hazard Perception & Visual Scanning

What research tells us

Novice drivers...

- Perceive less holistically
- Perceive hazards less quickly
- Perform smaller horizontal scans
- Look closer to the front of the vehicle
- Check mirrors infrequently

- Glance at objects infrequently
- Utilise peripheral vision inefficiently
- Fixate on fewer objects
- Fixate more on stationary objects
- Are more likely not to perceive a hazard at all
Modern Theories of Risk Appraisal

Modern theories in cognitive psychology and neuroscience indicate that there are two fundamental ways in which human beings comprehend risk:

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<th>Analytic System</th>
<th>Experiential System</th>
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<tr>
<td>Uses algorithms and normative rules</td>
<td>Developed through evolution</td>
</tr>
<tr>
<td>Formal logic, and risk assessment</td>
<td>The most natural and most common way for humans to respond to risk</td>
</tr>
<tr>
<td>Relatively slow</td>
<td>Relies on images and associations, linked by experience to emotions (a feeling that something is good or bad). Represents risk as a feeling that tells us whether it is safe to walk down a dark street [or continue driving at a certain speed]</td>
</tr>
<tr>
<td>Effortful</td>
<td></td>
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<tr>
<td>Requires conscious control</td>
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What drivers tell us

Focus group quotes from inappropriate high speed study

- “I think your body knows you’re outside your comfort zone. It just registers something and you say ‘back again’ instantly, to whatever speed you’re comfortable”

- “And again it was on the motorway, nobody else about, did it [high speed] for a couple of minutes, stopped whenever there was anything looking like it was getting too close. Just a bit too much sensory input for me, and a little bit too quick, even though feels like an empty road, it doesn’t feel comfy”
Somatic Marker Hypothesis

Damasio (2004)

- Damasio argues that unconscious processes take place before reasoning and a cost-benefit analysis.

- If, for example, a situation appears to be developing that could advance into something threatening or dangerous, a feeling of unpleasantness is produced in the body (i.e. a gut feeling). Damasio labels this a ‘Somatic Marker’ – ‘soma’ being Greek for ‘body’.

- It is a marker because this bodily feeling will be marked against the developing scenario so that the organism will learn that should this scenario be built up again, the body can respond earlier.
Clip 10: 20 year old Female, Experienced

Clip 10: 20 year old Female, Learner

SCR ($\mu$S)

- Critical Moment
- Anticipatory area
- Event area

15 seconds
Emotional responses to potential hazards

A learning curve?

Novice Driver Crash Risk
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Risks for young drivers when driving for work

- It has been estimated that between a quarter and a third of all road traffic accidents involve someone who was driving for work.

- Work-related driving risks include:
  - Fatigue
  - In-vehicle distraction
  - Time pressure

- Young drivers are more susceptible to all of these risks.

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Summary and Conclusions

- Young novice drivers are over represented in crashes in all developed countries.

- The increased crash risk of young drivers can be explained largely by age related factors and (in)experience related factors.

- Separating age from experience demonstrates a dramatic reduction in novice driver crash risk due to initial solo experience, at a time where no official tuition is taking place.

- Young drivers who drive for work are at increased risk because of the nature of work related crash risk combined with the risk associated with being young, and the likelihood of being inexperienced.
Thank you

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