Young and Novice Driver Research

Dr Neale Kinnear

Principal Psychologist
TRL
The Young Novice Driver Timeline

Learning to drive and test

Birth → Child

1. What factors contribute to novice driver crash risk?
2. Is there evidence that current interventions are effective at reducing novice driver crash risk?
What factors contribute to novice driver crash risk?
# Influences on young novice driver crash risk

What research tells us

<table>
<thead>
<tr>
<th>Age</th>
<th>Physical &amp; Mental Development</th>
</tr>
</thead>
<tbody>
<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>
</tr>
</tbody>
</table>
Novice Driver Crash Risk: Age v Experience

Maycock et al (1991)
Influences on young novice driver crash risk

What research tells us

**Lack of experience**
Poor Hazard Perception

**Gender**

**Age (related factors)**
Physical & mental development
Over-confidence in abilities
Expression
Thrill seeking
Lifestyle and social attitudes
Alcohol and Drugs
Peer influences
Parents
Novice drivers...

- ...have a very high collision risk relative to other drivers

- BUT as soon as they are given the chance to drive post-licence, they begin to learn very quickly (but not quickly enough!) to NOT have crashes

- How can we help them?
Is there evidence that current interventions are effective at reducing young novice driver crash risk?
Evidence

- In other fields dealing with health outcomes, systematic reviews have been accepted as being the best way to establish the level of support for any given treatment.

- Review ALL the evidence (don’t ‘cherry pick’) grade it for quality of design, and conclude levels of effectiveness.

- So what does the evidence looks like for driver training and education?
“The only direct benefits imparted by broad driver education and training would appear to be the basic vehicle control skills and knowledge of road rules necessary for entering the driving population. According to the evidence it has no measurable direct effect on collision risk, and its continued use should therefore be set against much lower expectations in terms of what it can contribute directly to the safety of new drivers.”

Helman, Grayson and Parkes (2010, p8)

Based on synthesis of numerous meta-analyses and systematic review papers (Clinton and Lonero, 2006; Mayhew et al., 2002; Roberts & Kwan, 2001; Christie, 2001; Vernick et al., 1999; Mayhew et al., 1998; Brown et al., 1987)
Proposed mechanisms for training and education as carried out in the past

- Equipping novices with skills and/or knowledge to drive safely (weak/no evidence)

- But why?
  - Training/educating the wrong things?
  - Transfer of training problem?
Training and educating the wrong things?

Things we teach learner drivers

Things that predict crash risk
Transfer of training problem?
<table>
<thead>
<tr>
<th></th>
<th>Near</th>
<th>Far</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge domain</td>
<td>Same manoeuvre</td>
<td>Similar but easier manoeuvre</td>
</tr>
<tr>
<td></td>
<td>Similar but easier manoeuvre</td>
<td>Less similar but easier manoeuvre</td>
</tr>
<tr>
<td></td>
<td>Less similar but easier manoeuvre</td>
<td>Different, harder manoeuvre</td>
</tr>
<tr>
<td>Physical context</td>
<td>Same car, same location</td>
<td>Different car, same location</td>
</tr>
<tr>
<td></td>
<td>Different car, similar location</td>
<td>Different car, less similar location</td>
</tr>
<tr>
<td></td>
<td>Different car different location</td>
<td>Different car different location</td>
</tr>
<tr>
<td>Temporal context</td>
<td>Same session</td>
<td>Next day</td>
</tr>
<tr>
<td></td>
<td>Next day</td>
<td>Weeks later</td>
</tr>
<tr>
<td></td>
<td>Weeks later</td>
<td>Months later</td>
</tr>
<tr>
<td></td>
<td>Months later</td>
<td>Years later</td>
</tr>
<tr>
<td>Functional context</td>
<td>Formal lesson</td>
<td>Lesson vs. assessment drive</td>
</tr>
<tr>
<td></td>
<td>Lesson vs. demanding drive</td>
<td>Lesson vs. leisure drive</td>
</tr>
<tr>
<td></td>
<td>Lesson vs. driving tired late at night</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social context</th>
<th>Near</th>
<th>Far</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver with tutor</td>
<td>Driver under supervision</td>
<td>Driver alone</td>
</tr>
<tr>
<td>Driver under supervision</td>
<td></td>
<td>Driver with peer</td>
</tr>
<tr>
<td>Driver alone</td>
<td></td>
<td>Driver with noisy peers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Modality</th>
<th>Driving in lesson</th>
<th>Driving lesson vs. driving test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test vs. post test driving</td>
<td></td>
<td>Post test classroom versus post test driving</td>
</tr>
<tr>
<td>Pre-test classroom versus post test driving</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| State/task/demand       | Lone driver, rested, light traffic, easy known situation | Lone driver, rested, heavy traffic, easy unknown situation | Lone driver, tired, heavy traffic, unknown situation | Distracted driver, new, easy situation | Tired driver, distracted, new, difficult situation |

What should we be doing?
Training the right things - Hazard perception

- Introduced into GB driving theory test in 2002
- Has reduced some crash types for novice drivers by 17% (Wells et al., 2008)
- Mechanism is presumed to be promotion of practice of hazard perception – a skill known to be related to crash risk
Transfer of training – Encouraging practice

- Sexton and Grayson (2010b)
  - Showed that those learner drivers with at least 2 hrs training/practice in the rain and on busy town centre roads ‘survive longer’ before having a road collision than those without this experience

- See also ‘independent driving’ in GB driving test
What else can we do?

- Concentrate on promoting safer attitudes and general principles related to safety?

  - According to transfer of training literature, general principles transfer more readily than specific skills and procedures (e.g. Barnett and Ceci, 2002; Groeger and Banks, 2007)

  - Examples might include:
    - General principles – “always wear a seat belt”, “minimise distractions”, or “slow down”
    - Specific procedures – “steering to avoid hazards” or “emergency braking”
Training versus limiting exposure

- Training approaches:
  - Any approach that relies largely on attempting to equip learners with the skills and/or knowledge they require to be a safe driver (e.g. ‘driving lessons’ and/or ‘driver education’)

- Limiting exposure approaches
  - Any approach that seeks to limit exposure to risk in the early post-licence period by disallowing novice drivers access to some driving situations (for example Graduated Driver Licensing – e.g. restricting night-time driving and carrying of teenage passengers)
Pre-licence

Restricted

Unrestricted

Low-risk situations

Night driving

Less exposure

Less exposure

Often minimum learning period

Passengers
“While a causal association between GDL and crash reductions cannot be proven through observational study designs, the effectiveness of GDL is supported by reductions in rates of all types of crash, (almost entirely) consistent positive results across studies and within studies when adjusting for internal controls...

(Hartling et al., 2004, p24).
Often minimum learning period

- **Pre-licence**
  - Low-risk situations
  - Less exposure
  - Passengers

- **Restricted**
  - Low-risk situations
  - Less exposure

- **Unrestricted**
  - Night driving
  - Passengers
Conclusions
Conclusions

- The vast majority of young novice driver crash risk comes from inexperience (e.g. poor hazard perception) and age related factors (e.g. acceptance of risk, lifestyle, development).

- Consideration of mechanisms of effect are crucial – mechanisms must have evidence of being related to crash risk. Also, some mechanisms are simply stronger than others.

- Tackling the biggest risk factor (inexperience) through mechanisms known to work (i.e. limiting exposure, increased pre-driver practice) is the most likely route to reducing novice driver crash risk.

- Tackling lifestyle or skill factors through education and training might seem attractive but evidence of effectiveness is lacking. However, education can play an essential role in supporting the former point.
Vision statements for the road safety community?

1. To understand the psychological **mechanisms** by which humans learn (to drive and become experienced)

2. Deliver training and education for drivers-to-be and novice drivers in the things **known** to be related to crash risk

3. Train in doses large enough and in contexts varied enough to **promote** transfer of the training to novel situations

4. Use education to **support** general principles and to legitimise recommendations or legislation that target reducing crash risk

5. Do all of this within an **integrated** approach where possible (Graduated Driver Licensing?)
Thank you

Presented by Dr Neale Kinnear
Principal Psychologist
TRL
Tel: 01344 77 0101
Email: nkinnear@trl.co.uk
References


References


References


Sexton, B. & Grayson, G. B. (2010b). Further analyses of accident data from the Cohort II study: when do drivers have their first accident and does it have an impact on their subsequent driving? TRL published report (PPR426). Crowthorne: Transport Research Laboratory.


References