Safe driving for life: changing attitude and behaviour through education, training and testing.
Impact of pre-learner driver education on risk perception in Irish adolescents

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Overview

• Background to the study
• Theoretical framework
• Sample and measures
• Results
• Implications
• Recommendations
Pre-learner driver education: What and Why

• Pre-learner drivers
  • Adolescents who have not yet obtained a provisional drivers licence

• Pre-learner driver education (PLDE)
  • Class-room based instruction
    • Intellectual/cognitive aspects of driving
      • Knowledge, thinking skills, attitudes

• Why PLDE
  • Risky attitudes towards driving develop from an early age
    • Cradle Attitudes, Grave Consequences” (Waylen & Mc Kenna, 2002)
Task Capability Interface Model (Fuller, 2005)

(see Wegman & Aarts, 2006, p.34)
## (GDE Matrix – Goals for Driver Education)

<table>
<thead>
<tr>
<th>Levels</th>
<th>Area</th>
<th>Knowledge and skill</th>
<th>Risk increasing aspects</th>
<th>Self assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goals for life and skills for living</td>
<td>Goals and context of driving</td>
<td>Lifestyle, age, group, culture, social position etc., vs. driving behaviour</td>
<td>Sensation seeking, Risk acceptance, Group norms, Peer pressure</td>
<td>Introspective competence, Own preconditions, Impulse control</td>
</tr>
<tr>
<td></td>
<td>Goals and context of driving</td>
<td>Modal choice, Choice of time, Role of motives, Route planning</td>
<td>Alcohol, fatigue, Low friction, Rush hours, Young passengers</td>
<td>Own motives influencing choices, Self-critical thinking</td>
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<tr>
<td>Driving in traffic</td>
<td>Driving in traffic</td>
<td>Traffic rules, Cooperation, Hazard, perception, Automatization</td>
<td>Disobeying rules, Close-following, Low friction, Vulnerable r.u.</td>
<td>Calibration of driving skills, Own driving style</td>
</tr>
<tr>
<td>Vehicle control</td>
<td>Vehicle control</td>
<td>Car functioning, Protection systems, Vehicle control, Physical laws</td>
<td>No seatbelts, Breakdown of vehicle systems, Worn-out tyres</td>
<td>Calibration of car-control skills</td>
</tr>
</tbody>
</table>

(Hatakka et al., 2002)
## Participants

<table>
<thead>
<tr>
<th>Programme</th>
<th>Groups / Clusters</th>
<th>Number of students</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Baseline (T1)</td>
<td>Post-intervention (T2)</td>
<td>Follow-up (T3)</td>
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<tr>
<td>Programme A</td>
<td>5</td>
<td>244</td>
<td>207</td>
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<td>Programme C</td>
<td>6</td>
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<td>Group D</td>
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<td>Controls</td>
<td>10</td>
<td>291</td>
<td>199</td>
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<td>Whole School Drop-out</td>
<td>3</td>
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<td><strong>Total</strong></td>
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<td><strong>1880</strong></td>
<td><strong>1324</strong></td>
<td><strong>1412</strong></td>
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### DEMOGRAPHICS

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
<th>Urban Dwellers</th>
<th>Rural Dwellers</th>
<th>Parents with 3&lt;sup&gt;rd&lt;/sup&gt; level Ed.</th>
<th>Parents with 2&lt;sup&gt;nd&lt;/sup&gt; Level Ed</th>
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<tr>
<td></td>
<td>54%</td>
<td>46%</td>
<td>62%</td>
<td>38%</td>
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<td>FACTOR</td>
<td>FOCUS</td>
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<td>Demographics</td>
<td>Age / Gender / Location / School Type / Prog. Type</td>
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<td>Direct Experience</td>
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<td>Manchester D. B. Questionnaire (Reason et al.1990)</td>
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<td>Observational Learning</td>
<td>Exposure to aberrant driving styles</td>
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<td>Personality</td>
<td>Sensation Seeking - AISS Scale</td>
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<td>5-Factor Model - IPIP</td>
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<td>(Arnett, 1994)</td>
<td>(Spinella, 2007)</td>
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<td>(Goldberg, 1998)</td>
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<td>Factual Knowledge</td>
<td>Baseline General Knowledge</td>
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<td>Post-Intervention multiple-choice quiz (Rules of the Road)</td>
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<td>Cognitive Skill - Risk Perception</td>
<td>Objective and Subjective risk estimations</td>
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<td>Self-efficacy beliefs</td>
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<td>Programme Evaluation</td>
<td>Evaluation of programme content &amp; delivery</td>
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<td>Suggestions for programme improvement</td>
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Interest in driving

• At the start of the study
  - 80% planned to obtain a Learner Driver Permit asap
  - No significant effects of age, gender, SES or PLDE

• By the end of the study
  – 46% had taken the driver theory test
    • Males twice as likely to pass
    • No significant effect of PLDE on pass rates
  – 35% had passed their test and had a Learner Permit
    • Males significantly more likely to have a Learner Permit
    • Students who took PLDE courses were less likely to have a permit
Previous experience with driving

- The majority of the students had some experience with driving
  - 55% at Time 1 rising to 71% at the end of the study
  - Males twice as likely
  - Rural dwellers more likely to have driven
  - Some personality traits predicted early car driving
  - No effects of attending PLDE on vehicle use

- Unaccompanied driving
  - Almost one-third reported driving unaccompanied in all three tests
  - Males twice as likely to drive unaccompanied than females
  - No significant effect of PLDE on reducing unaccompanied driving

- Driving under risk-increasing conditions
  - With other teenagers in the car 16%
  - Fatigue and/or feeling angry/stressed 10%
  - Using hand-held or hands-free phone (5% - 6%)
  - Performing illegal manoeuvres 4%, driving fast to show off 4%
  - Racing other cars 2%
Risk perception and driving

In order to perceive risk accurately drivers must:

• Identify potential hazards
• Assess their skill in avoiding these hazards
• Recognize the risk in potential hazards (Deery, 1999)

Young drivers perceive less risk in high-risk activities

• Poor risk perception rather than deliberate risk taking (Finn & Bragg, 1986)
• Learned Riskiness (Fuller, 1992)
  • Experience with or exposure to risky driving hinders the calibration of risk perception
What makes a difference in whether or not teen drivers are safe in cars?

- Driver has been drinking alcohol
- Driver has been taking drugs or smoking dope
- Driver is racing other cars
- Car can go really fast and the driver is testing it out or showing it off
- Driver is texting, playing video games or using hand held electronic device
- Passengers are trying to get driver to speed or perform illegal manoeuvres
- Driver is inexperienced
- Driver is feeling strong emotions like being angry or stressed
- Other drivers are driving unsafely
- Driver is paying attention to the passengers because they are being "rowdy"
- Driver and passengers are not wearing seatbelts
- Driver is tired
- Driver is talking on a hand-held mobile phone
- It is cold or wet and the roads are slippery
- Roads in bad condition
- Driver is in a hurry
- There are other teenagers in the car
- Its dark outside

Mean score
- 1.0 No Difference
- 1.2
- 1.4
- 1.6
- 1.8
- 2.0
- 2.2 Some Difference
Perceived risk of crash involvement

CHANCES OF CRASH INVOLVEMENT FOR PARTICIPANT THEMSELVES AS A LEARNER/NOVICE DRIVER

- Very likely: T3 = 3.61, T2 = 3.54, T1 = 3.66
- Likely: T3 = 3.55, T2 = 3.54, T1 = 3.64
- 50/50: T3 = 3.14, T2 = 3.10, T1 = 3.11
- Unlikely: T3 = 0, T2 = 0, T1 = 0

CHANCES OF CRASH INVOLVEMENT FOR PARTICIPANT THEMSELVES AS A ROAD USERS

- Very likely: T3 = 3.61, T2 = 3.54, T1 = 3.66
- Likely: T3 = 3.55, T2 = 3.54, T1 = 3.64
- 50/50: T3 = 3.14, T2 = 3.10, T1 = 3.11
- Unlikely: T3 = 0, T2 = 0, T1 = 0

CHANCES OF CRASH INVOLVEMENT FOR A TYPICAL ROAD USER

- Very likely: T3 = 3.61, T2 = 3.54, T1 = 3.66
- Likely: T3 = 3.55, T2 = 3.54, T1 = 3.64
- 50/50: T3 = 3.14, T2 = 3.10, T1 = 3.11
- Unlikely: T3 = 0, T2 = 0, T1 = 0
How much time does it take to reduce driving risk?

- **MORE THAN 9 YEARS**
  - T3: 33%
  - T2: 44%
  - T1: 32%

- **7-9 YEARS**
  - T3: 11%
  - T2: 14%
  - T1: 25%

- **5-7 YEARS**
  - T3: 7%
  - T2: 14%
  - T1: 36%

- **3-5 YEARS**
  - T3: 10%
  - T2: 35%
  - T1: 39%

- **1-3 YEARS**
  - T3: 18%
  - T2: 23%
  - T1: 29%

- **LESS THAN 1 YEAR**
  - T3: 15%
  - T2: 17%
  - T1: 15%
Willingness to take risks in traffic

<table>
<thead>
<tr>
<th>Scenario</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Willing to take a lift with a driver who has been drinking</td>
<td>1.69</td>
<td>1.78</td>
<td>1.75</td>
</tr>
<tr>
<td>Willing to ride motorcycle without a helmet</td>
<td>1.69</td>
<td>1.78</td>
<td>1.75</td>
</tr>
<tr>
<td>Willing to refrain from wearing seatbelt in car</td>
<td>2.08</td>
<td>3.07</td>
<td>2.57</td>
</tr>
<tr>
<td>Willing to drive parents car without permission</td>
<td>2.08</td>
<td>3.07</td>
<td>2.57</td>
</tr>
<tr>
<td>Willing to take a lift with a driver who speeds</td>
<td>2.08</td>
<td>3.07</td>
<td>2.57</td>
</tr>
<tr>
<td>Willing to cross a busy road from between parked cars</td>
<td>1.57</td>
<td>3.34</td>
<td>3.34</td>
</tr>
<tr>
<td>Willing to refrain from wearing a seatbelt in a school bus</td>
<td>1.57</td>
<td>3.34</td>
<td>3.34</td>
</tr>
<tr>
<td>Willing to cycle without a helmet</td>
<td>1.57</td>
<td>3.34</td>
<td>3.34</td>
</tr>
</tbody>
</table>
Explicit and implicit risk perception

Consider this:

Mark is 17 years old and has had a learner permit to drive for 6 months. One Saturday night while his parents are away he decides to use his dad’s car to take some of his friends to a disco in a nearby town. The disco finishes at 2am and on the way home Mark decides to see how fast the car can go.

Your Task:

• List all the possible consequences that you can think of just as they come into your mind
## Explicit and implicit risk perception

<table>
<thead>
<tr>
<th>Consequence</th>
<th>Baseline</th>
<th>Post-intervention</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crash</td>
<td>85.7%</td>
<td>88.0%</td>
<td>85.3%</td>
</tr>
<tr>
<td>Death</td>
<td>51.3%</td>
<td>43.1%</td>
<td>50.7%</td>
</tr>
<tr>
<td>Injury</td>
<td>48.8%</td>
<td>33.6%</td>
<td>38.7%</td>
</tr>
<tr>
<td>Caught by Gardai</td>
<td>38.2%</td>
<td>31.8%</td>
<td>38.1%</td>
</tr>
<tr>
<td>Damage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cars/property</td>
<td>34.5%</td>
<td>23.9%</td>
<td>17.1%</td>
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<tr>
<td>Loose Control</td>
<td>22.9%</td>
<td>14.9%</td>
<td>14.9%</td>
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<tr>
<td>Legal problems</td>
<td>21.7%</td>
<td>13.9%</td>
<td>3.2%</td>
</tr>
<tr>
<td>Trouble with parents</td>
<td>15.6%</td>
<td>13.0%</td>
<td>17.5%</td>
</tr>
<tr>
<td>Increased risk/danger</td>
<td>11.5%</td>
<td>13%</td>
<td>9.3%</td>
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<tr>
<td>Moral issues</td>
<td>5.3%</td>
<td>2.3%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Nothing</td>
<td>12.9%</td>
<td>12.3%</td>
<td>9.5%</td>
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<tr>
<td>Benefits</td>
<td>4.9%</td>
<td>2.6%</td>
<td>1.5%</td>
</tr>
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</table>
Implicit risk perception

Order in which serious safety-related consequences were listed:
1. Crashing
2. Losing control
3. Increased risk
4. Death / injury

• Students listed these consequences significantly more quickly at T2/3
• Attending PLDE significantly improved students ability to think of serious consequences quickly in the short-term -not the long-term
• Absent links in mental representations
  • One third of the students who listed Crashing did not go on to list Injury and/or Death as a possible consequence
  • PLDE students 25% more likely to associate death and injury with crashing
• Overall conclusion
  • **PLDE had a positive effect on implicit risk perception**
Summary

• Students had some capability to perceive driving-related risk
• There were small statistically significant improvements in risk perception in the short but not the longer term
• No consistent effect of PLDE on improving calibration of risk perception
• PLDE produced significant improvements in availability and accessibility of key risk outcomes
• Previous exposure to aberrant driving impacted negatively on risk perception in all tests
  • PLDE did not compensate for this
Recommendations

- PLDE should be made available for all second-level students
- Standards and guidelines required for TY courses to ensure that they are of the highest quality
- New content and activities should be developed to address key risk-increasing factors for youngsters
  - Inexperience
  - Immaturity
- Parents and the community at large need to be made aware that their driving style is having an impact on young adolescent pre-drivers
  - Scope for involving parents in the development and delivery of PLDE courses
Thank you for your attention!