Evaluation of the Reducing Aggressive Driving Program (RAD)

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Abstract:
With the support and collaboration of the ACT Road-Safety Fund, the research team developed the prototype Reducing Aggressive Driving program (RAD). The RAD is a behaviour change program designed to reduce aggression in drivers. The RAD focuses on instilling knowledge, as well as modifying the key psychological aspects motivating driver behaviour. The key behaviour modification techniques used to motivate safer on-road behaviour include feedback, goal setting and group discussion. The aim of this project was to evaluate the RAD program and its effectiveness in reducing anger and aggressive driving. Ten two-hour RAD sessions were delivered via zoom between April and June, 2021 with a total of 5 to 14 participants in each. Overall, 94 drivers (Mean age = 38 years; 38% drove in the ACT) completed one RAD session. Process evaluation showed a high degree of support for the RAD, with 87% of participants saying it helped them generate realistic strategies to avoid aggressive driving. The effectiveness of these strategies was measured via online questionnaires regarding anger tendencies and aggressive behaviours one month, and four months after the RAD. Scores for these were compared to baseline measures taken before participation in the RAD. A total of 67 participants completed both follow up measures (28% attrition). Self-reported anger and aggression decreased after the RAD and this effect remained significant at the four month follow up. Thus, providing evidence of the RAD in reducing these dangerous behaviours. Further research is needed to objectively measure changes in behaviour and to support broader roll-out of the RAD.

Key words: Anger, Aggression, Reducing Aggressive Driving, Behaviour change

Disclaimer: This report is disseminated in the interest of information exchange. The views expressed here are those of the authors, and not necessarily those of Monash University.
PREFACE

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Contributorship Statement
Dr Stephens: evaluation design, recruitment, ethics, RAD delivery and facilitation guide development, data analysis and final report
A/Prof Newnam: evaluation design, RAD delivery and facilitation guide development, final report
Dr Young: evaluation design, final report

Ethics Statement
This project was approved by the Monash University Human Ethics Research Committee project number: 27688

Peer-review
This report has subject to internal peer review to ensure quality.

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EXECUTIVE SUMMARY

The ACT Road Safety Fund supported development of the Reducing Aggressive Driving program (RAD) aimed at helping drivers to understand why they become angry or aggressive on the roads and to develop strategies to avoid anger or aggression (Newnam, Stephens, Young & Cooke, 2020). This project delivered and evaluated the RAD. The evaluation considered the program delivery (learning outcome evaluation) and the effectiveness of the program on reducing anger and aggressive driving (outcome evaluation). The outcome evaluation compared self-report measures for anger (Measure for Angry Drivers; Stephens et al., 2019) and aggressive driving (Driver Anger Expression Inventory_short; Stephens & Sullman, 2014) taken one week before the RAD program, with measurements taken one month (follow up 1) and four months (follow up 2) after the RAD program. This provided understanding of any relatively immediate effects of the RAD, and whether these were maintained across a longer period.

The RAD was initially aimed at supporting young drivers (18-25) in the ACT. However, difficulties with recruitment led to a sample that included drivers from most States or Territories in Australia and a broader age range. Thus, in the final sample of 94, 38% drove in the ACT and 28% were aged between 18-25. Most (68%) of the sample drove between 10,000 to 30,000 kilometres per year; 32% drove primarily for work. The sample had a reasonable gender split: 56% males. The sample self-selected as being angry and aggressive drivers, and their anger tendencies and self-reported aggressive driving frequencies were higher than previous samples from the ACT (Newnam et al., 2020) and Australia (Stephens et al., 2019). However, on average, these were moderate levels of anger and aggression. All participants held a valid license.

A total of ten RAD sessions were conducted between April to June 2021 with between 5 to 14 participants in each. The sessions were held on Zoom and lasted for 2-hours. During each session, participants were educated about the road toll and crash risk of aggressive driving and the reasons for anger and aggression. The latter half of the session focused on exploring triggers for anger and subsequent aggression then generating strategies to manage the triggers and avoid aggression. The focus was on group discussion and individual goal setting.

Learning outcome evaluation: After completion of the RAD session, participants were sent a link to an online survey as part of the learning outcome evaluation. This survey sought feedback on whether the learning objectives were achieved, ratings for the content and facilitation, what participants liked / disliked and what could be changed about the RAD. Quantitative and qualitative responses were sought. Key finding from the learning outcome evaluation of the RAD:

- The RAD was well received by participants, with the vast majority (87%) saying they generated realistic strategies to avoid aggression and (73%) saying no changes were needed to the program.
- The RAD design created a friendly, informal, and non-judgmental space to share experiences and develop strategies to improve behaviour.
- Many participants liked the opportunity to talk about their anger with likeminded people, thus personalising the other driver and realising they are not alone.
- The RAD works best in small groups (eg 8 – 10), possibly tailored for specific needs.
- The RAD could consider follow up information, or online groups, discussion board or second session to discuss whether strategies worked.

Outcome evaluation: The outcome evaluation showed that RAD demonstrated excellent effectiveness at reducing self-reported anger and aggression in the participants. However, it should be noted that 27% of the sample who completed the RAD did not complete either the first or second follow up. Therefore, the evaluation was conducted on 67 participants who provided responses at all three timepoints. Key findings regarding the effectiveness of the RAD were:

- Almost all drivers said the RAD was helpful in managing frustrations (97%) and aggression (92%) up to four months after participation in the RAD.
- Almost all participants were using the strategies from the RAD. At the one month follow up, 94% said they tried at least one of the strategies they generated in the RAD session. At the four-month follow-up 86% were still using the strategies generated in the RAD.
- Reasons for not using strategies from the RAD included forgetting them or not driving due to COVID restrictions.
- The most common strategy used and maintained was to play music or listen to the radio, and the 5 x 5 x 5 strategy ("will this matter in 5 minutes", will this matter in 5 hours? Will this matter in 5 days?" If no, then move on.] Half of the sample used these, and 70% of these drivers were still using the strategies at the four-month stage.
- Four months after the RAD, 74% of participants who were using the strategies said that they had also helped manage anger outside of driving.
• Significant decreases in anger and aggression were noted after the RAD, and these were sustained at the four month follow up. All anger and aggression scores were significantly lower at four months than baseline.

• Overall, reductions in anger and aggression after the RAD were similar between 18-25 year old drivers and older drivers, and also between people who drive in the ACT compared to those who do not. This demonstrates the ability of the RAD to cater for a range of drivers.

Summary: The results provide evidence of the RAD as a tool to support drivers to become less angry or aggressive on the road. However, this evidence would be strengthened with objective driving data to assess changes in behaviour as a result of the RAD. Avenues for expansion of the RAD are currently being explored. To facilitate a broader roll-out of this tool, a train-the-trainer system is required whereby facilitators are provided with the necessary tools to conduct these sessions. A facilitation guide is attached to this report.
PART 1 THE RAD PROGRAM

WHAT IS THE RAD?

With the support and collaboration of the ACT Road-Safety Fund, the research team developed the prototype Reducing Aggressive Driving program (RAD). The RAD is a behaviour change program designed to reduce aggression in drivers and was designed in line with other successful MUARC training programs (Newnam et al., 2012; 2014).

Fundamental to the RAD is the idea that behaviour is not a singular concept – thus, interventions to improve road safety, need to understand that not all behaviours are the same and not all drivers will react the same way in the same situation each time. A driver when frustrated may tailgate the car who merged in front, while another driver, in the same situation, may choose to simply ease off speed. Thus, the RAD, in line with other successful MUARC training programs focuses on instilling knowledge, as well as modifying the key psychological aspects motivating driver behaviour. The key behaviour modification techniques used to motivate safer on-road behaviour include feedback, goal setting and group discussion.

The RAD is delivered in one session, via Zoom, that lasts for 2-hours. The RAD is structured into four components:

**Training program elements**
- The road toll and defining anger and aggression
- Provide feedback on a survey of anger and aggressive driving
- Explore reasons for engaging in anger and the triggers for aggression
- Generate strategies to manage the triggers of anger and aggression

**STUDY DESIGN**

This project aimed to seek feedback on the RAD delivery (learning outcome evaluation) and to evaluate the effectiveness of the RAD in reducing anger or aggressive driving (outcome evaluation). The learning outcomes evaluation was conducted immediately after completion of the RAD through an online survey sent to the participant the same day they completed the RAD. The outcome evaluation was undertaken using three surveys: 1) completed approximately one week before the RAD (baseline), 2) Completed one a month after the RAD (follow up 1) and 3) completed four months after the RAD (follow up 2). Participants received a $50 voucher for attending the RAD and completing the learning outcome evaluation. A further $20 voucher for was issued after both follow up surveys had been completed for the outcome evaluation. These were digital vouchers for either Coles, Target, Kmart or Officeworks.

An initial sample of 100 young drivers in the ACT (aged 18-25) was targeted. However, due to recruitment challenges discussed below, this was expanded to 100 drivers across Australia (ensuring adequate representation from ACT drivers).
PART 2  RECRUITMENT

RECRUITMENT STRATEGY

Recruitment was conducted using an online Expression of Interest survey. This sought general information about gender, age, postcode, percentage of time driving for work and personal reasons, annual mileage and crash and infringement history (in the previous year).

Several avenues were undertaken to recruit, including:

- Social media, such as paid Facebook, twitter, MUARC web page
- Radio interview of Drive Time Canberra (9th April)
- National Road Safety Partnership shared with workplaces in ACT with high volume of drivers (e.g. ACTeAGL ALC, ATA and Zurich)
- Advertisement placed in the Canberra Times (Saturday 22nd May)
- Emails to Canberra Institute of Technology / ANU / ACU
- Emails to community groups (i.e. Menslink)
- Gumtree

Initially, recruitment targeted only young drivers in the ACT (under 25). Due to low enrolment rates and to increase statistical power this was first broadened to all ages in the ACT, then later all ages in Australia.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clicked on expression of interest</td>
<td>1379</td>
</tr>
<tr>
<td>Provided full responses to questions</td>
<td>926</td>
</tr>
<tr>
<td>Left emails for contact</td>
<td>421</td>
</tr>
<tr>
<td>Signed up after email</td>
<td>151</td>
</tr>
<tr>
<td>On waiting list for after hours</td>
<td>24</td>
</tr>
<tr>
<td>Signed up for advertised sessions</td>
<td>127</td>
</tr>
<tr>
<td>Completed a session and eval</td>
<td>94</td>
</tr>
</tbody>
</table>

FINAL PARTICIPANTS

All participants held a valid licence, were aged 18 or older and reported sometimes becoming angry or aggressive while driving.

The final sample completing the RAD (N = 94) were aged between 18 and 74 (M = 38.03; SD = 15.23). There was a relatively even gender split consisting of 56% males, 44% females and one non-binary. Over one third (37.6%) of the sample drove in the ACT.

<table>
<thead>
<tr>
<th>State of residence</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW</td>
<td>24.7</td>
</tr>
<tr>
<td>ACT</td>
<td>23.7</td>
</tr>
<tr>
<td>VIC</td>
<td>32.3</td>
</tr>
<tr>
<td>QLD</td>
<td>8.6</td>
</tr>
<tr>
<td>WA</td>
<td>1.1</td>
</tr>
<tr>
<td>TAS</td>
<td>4.3</td>
</tr>
<tr>
<td>NT</td>
<td>1.1</td>
</tr>
</tbody>
</table>
Fifteen percent of the sample had been involved in a crash in the previous year and 23.7% had received a traffic infringement (not parking related in the past year). The infringements\(^1\) were for speeding (17% of the respondents), failing to stop at a red traffic light (4%), using mobile phone (5%) and not wearing a seat belt (1%).

Two thirds (67%) of the drivers drove mainly for personal reasons, while 33% drove for work purposes.

Almost one-third of the sample were aged 18-25 years. This percentage allows comparisons between these early licence holders with drivers of other age groups.

### Mileage

<table>
<thead>
<tr>
<th>Mileage</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low (10,000km or less)</td>
<td>24.7</td>
</tr>
<tr>
<td>Medium (10,001 to 30,000)</td>
<td>62.8</td>
</tr>
<tr>
<td>High 30,000km +</td>
<td>11.7</td>
</tr>
</tbody>
</table>

### Age category (years)

<table>
<thead>
<tr>
<th>Age category (years)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-25</td>
<td>27%</td>
</tr>
<tr>
<td>26-39</td>
<td>31%</td>
</tr>
<tr>
<td>40-64</td>
<td>36%</td>
</tr>
<tr>
<td>65+</td>
<td>7%</td>
</tr>
</tbody>
</table>

### DIFFERENCES BETWEEN PARTICIPANT GROUP AND INITIAL INTEREST GROUP

Comparisons were undertaken between participants that completed the initial survey but did not participate in the RAD (i.e., did not sign up to a session: N=926) with those who did participate in the RAD. These analyses were considered necessary to understand if there were any barriers to participation or types of drivers unlikely to participate in the RAD.

The results showed that people who completed the RAD were slightly older than those who did not participate in the RAD (but completed the initial survey). Those who drove in the ACT were more likely to participate (see Table 1).

<table>
<thead>
<tr>
<th>Demographics</th>
<th>RAD participants (N = 94)</th>
<th>Interested participants (N = 926)</th>
<th>Different</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>M = 38.03 (15.23)</td>
<td>M = 30.67 (SD = 13.09)</td>
<td>T(983) = 7.36, p &lt; .001</td>
</tr>
<tr>
<td>Gender</td>
<td>Males = 56%</td>
<td>Males = 59%</td>
<td>X2 (2) = .31, p = .86</td>
</tr>
<tr>
<td>Do you drive in the ACT</td>
<td>Yes = 37.6%</td>
<td>Yes = 26.0%</td>
<td>X2 (1) = 5.79, p = .02</td>
</tr>
<tr>
<td>Crashes in the previous year</td>
<td>Yes = 15.1%</td>
<td>Yes = 20.0%</td>
<td>X2(1) = 1.28, p = .26</td>
</tr>
<tr>
<td>Infringement notices in the previous year</td>
<td>Yes = 23.7%</td>
<td>Yes = 26.5%</td>
<td>X2 (1) = .36, p = .55</td>
</tr>
<tr>
<td>Annual mileage</td>
<td>Low = 24.7%</td>
<td>Low = 21.6%</td>
<td>X2 (2) = 3.67, p = .16</td>
</tr>
<tr>
<td></td>
<td>Med = 63.4%</td>
<td>Med = 58.4%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>High = 11.9%</td>
<td>High = 20.0%</td>
<td></td>
</tr>
<tr>
<td>Non work drivers</td>
<td>Yes = 66.7%</td>
<td>Yes = 57.5%</td>
<td>X2(1) 2.87, p = .09</td>
</tr>
</tbody>
</table>

\(^1\) As participants could choose more than one type of infringement these do not equal 23.7%.
ANGER AND AGGRESSION TENDENCIES OF THE RAD PARTICIPANTS

Baseline survey: measurement of anger and aggression

The levels of anger and aggression were measured in two ways:

- A single 11-point item asking for general ratings while driving for both anger and aggression (0 = low; 10 = high)
- Multidimensional measures of anger and aggression, using validated scales.
  - Measure for Angry Driving (Stephens et al., 2019). This is a 23-item scale that measures the likelihood of becoming angry across three broad types of situations: Danger posed by other drivers, hostility from other drivers, travel delays.
  - The driving anger expression inventory short form (Stephens & Sullman, 2014). This is a 15-item scale that measures four ways anger can be expressed. These are through verbal means (yelling, gesticulating), using the vehicle aggressively (tailgating, speeding), personal physical aggression (trying to engage in a fight) and also adaptive constructive ways of dealing with anger (i.e. telling oneself not to worry about it).

Overall, participants rated themselves as average for anger (range of 0 to 8, M = 4.78; SD = 2.29) and aggression (range = 0 to 8, M = 4.22; SD = 2.17).

The most and least angering situations were similar for the RAD sample when compared with a previous sample taken from the ACT as part of the RAD development (Newnam et al., 2020) and a different sample from other states in Australia (Stephens et al., 2019) (see Table 2). Danger from others was the most anger provoking situations, followed by hostility from other drivers. Travel delays were the least anger provoking situations. This is to be expected given that anger is a natural response to a perceived threat, which might be safety critical. It is also hard to plan around discrete events such as danger from others or direct hostility, whereby travel delays can be planned for.

Comparison tests also showed that the RAD sample had significantly higher anger means for all three types of situations when compared to data previously collected from drivers in the ACT as part of the RAD development (funded by the ACT Road Safety Fund) and a broader Australian sample (ps < .001).

Table 2: Self-reported anger in RAD participants compared to previous research

<table>
<thead>
<tr>
<th>Situational anger tendencies</th>
<th>Cronbach alpha</th>
<th>RAD sample M (SD) N = 90*</th>
<th>ACT sample (Newnam et al., 2020) M (SD) N = 630</th>
<th>Australian sample (Stephens et al., 2019) M (SD) N = 414</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger from others</td>
<td>.92</td>
<td>3.46 (.77)</td>
<td>2.91 (.77)</td>
<td>2.75 (.77)</td>
</tr>
<tr>
<td>Hostility from others</td>
<td>.81</td>
<td>3.12 (1.18)</td>
<td>2.42 (.93)</td>
<td>2.24 (1.02)</td>
</tr>
<tr>
<td>Travel delays</td>
<td>.92</td>
<td>2.19 (.72)</td>
<td>1.59 (.62)</td>
<td>1.68 (.64)</td>
</tr>
</tbody>
</table>

* four participants did not complete the baseline survey
The RAD participants reported higher aggression tendencies than the drivers in the ACT, and broader Australia (ps < .001; see Table 3) indicating that the sample reported moderate levels of anger and aggression, which were higher than documented previously. Thus, the recruitment of people with some level of anger or aggression was successful.

Table 3: Self-reported aggression in RAD participants compared to previous research

<table>
<thead>
<tr>
<th>Anger expression tendencies</th>
<th>Cronbach alpha</th>
<th>RAD sample (M (SD)) N = 90*</th>
<th>ACT sample (Newnam et al., 2020) (M (SD)) N = 630</th>
<th>Australian sample (Stephens et al., 2019) (M (SD)) N = 414</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal aggression</td>
<td>.68</td>
<td>2.58 (.73)</td>
<td>2.10 (.74)</td>
<td>1.88 (.73)</td>
</tr>
<tr>
<td>Use of vehicle aggressively</td>
<td>.62</td>
<td>1.83 (.63)</td>
<td>1.36 (.47)</td>
<td>1.33 (.43)</td>
</tr>
<tr>
<td>Personal physical aggression</td>
<td>.64</td>
<td>1.25 (.38)</td>
<td>1.10 (.26)</td>
<td>1.12 (.24)</td>
</tr>
<tr>
<td>Adaptive constructive aggression</td>
<td>.80</td>
<td>2.46 (.69)</td>
<td>2.71 (.73)</td>
<td>2.62 (.78)</td>
</tr>
</tbody>
</table>

* four participants did not complete the baseline survey

Participants were also asked whether their anger or aggression changed as a result of having passengers in the car. Almost half (49%) said they were less angry or aggressive, 42% said it was the same and 5% said they were angrier. While the study was originally designed to collect data from significant others of the participants to provide more objective data about behaviour change, the number of participants who provided this information was not high enough to support this method.
PART 3 RAD DELIVERY

RAD PARTICIPANTS

The RAD was delivered across 10 sessions conducted between April to June 2021. Table 4 describes the key demographics of the participant group. Analysis was also undertaken to check for differences in key demographics that could potentially bias the outcomes. There were no differences in gender distribution, average anger or aggression scores across the groups.

Table 4: RAD delivery April to June 2021

<table>
<thead>
<tr>
<th>Session</th>
<th>Date</th>
<th>Number</th>
<th>Age range</th>
<th>Gender</th>
<th>Anger</th>
<th>Aggression</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>% males</td>
<td>% females</td>
<td>M (SD)</td>
</tr>
<tr>
<td>1</td>
<td>April 26 am</td>
<td>13</td>
<td>24 – 58</td>
<td>54</td>
<td>46</td>
<td>4.67 (2.11)</td>
</tr>
<tr>
<td>2</td>
<td>April 26 pm</td>
<td>8</td>
<td>19 – 46</td>
<td>86</td>
<td>14</td>
<td>5.38 (2.20)</td>
</tr>
<tr>
<td>3</td>
<td>April 27 pm</td>
<td>9</td>
<td>22 – 69</td>
<td>56</td>
<td>44</td>
<td>4.62 (2.45)</td>
</tr>
<tr>
<td>4</td>
<td>April 30 am</td>
<td>10</td>
<td>18 – 65</td>
<td>50</td>
<td>50</td>
<td>5.00 (2.05)</td>
</tr>
<tr>
<td>5</td>
<td>May 24 am</td>
<td>6</td>
<td>38 – 73</td>
<td>67</td>
<td>33</td>
<td>5.17 (2.71)</td>
</tr>
<tr>
<td>6</td>
<td>May 24 pm</td>
<td>7</td>
<td>29 - 74</td>
<td>71</td>
<td>29</td>
<td>4.00 (2.19)</td>
</tr>
<tr>
<td>7</td>
<td>May 25 pm</td>
<td>10</td>
<td>28 – 72</td>
<td>70</td>
<td>30</td>
<td>4.33 (2.91)</td>
</tr>
<tr>
<td>8</td>
<td>May 28 am</td>
<td>5</td>
<td>24 – 59</td>
<td>60</td>
<td>40</td>
<td>3.75 (3.40)</td>
</tr>
<tr>
<td>9</td>
<td>June 16 am</td>
<td>14</td>
<td>19 – 34</td>
<td>43*</td>
<td>50</td>
<td>4.93 (2.01)</td>
</tr>
<tr>
<td>10</td>
<td>June 18 am</td>
<td>12</td>
<td>20 - 27</td>
<td>33</td>
<td>67</td>
<td>5.33 (2.39)</td>
</tr>
</tbody>
</table>

* Columns do not equal 100 as there were Non binary participants; N = 93 due to one excluded participant

RAD STRUCTURE

As mentioned above, the RAD program consisted of four elements. The first two lasted approximately 60 minutes and covered introductions and the ice-breaker activity. The ice-breaker activity involved each participant introducing themselves and saying why they signed up for the RAD. This provided information regarding interest levels and who may participate in the RAD program in the future. For example, many participants said they felt their aggression was a problem, or that they didn’t like it. Some noted that they do not want their children to model their behaviour. This was with older children now learning to drive, and younger children. A number mentioned that their significant other had suggested they participate, again demonstrating the strength of significant others in shaping behaviour. Other participants were motivated by the $70 incentive (especially Victorian participants who were experiencing lockdowns and closure of many businesses at the time). The ice-breaker activity also served to created group cohesion, with many participants later reporting that a highlight of the RAD, and subsequent strategy they used, was recognising they were not alone, and other drivers are as frustrated on the roads as they are.

The road statistics, definitions of anger and aggression and survey results of the development study (Newnam et al., 2020) were presented in the second section as a way of helping participants place their behaviours in the broader road safety context. The second hour focussed on group discussion to understand triggers for anger and aggression and development of strategies to avoid or reduce anger and aggression.
TRIGGERS IDENTIFIED DURING THE RAD

Triggers identified in the RAD are listed in Appendix A.1. These covered internal situations such as poor journey planning or existing mood. External triggers included the behaviour from others or travel delays and within the vehicle such as GPS failure or additional workload due to traffic (i.e. more changing gears). The handout in Appendix A.1 was provided to participants at the final follow up survey.

STRATEGIES IDENTIFIED DURING THE RAD

A number of strategies were identified during the RAD and included changes in behaviour, changes in thinking or relaxation practices (see Table 5). These are also summarised in Appendix A.2. This handout was provided to participants at the final follow up survey.

Table 5: Types of strategies identified during the RAD

<table>
<thead>
<tr>
<th>Behavioural</th>
<th>Cognitive</th>
<th>Relaxation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pull over/ stop driving</td>
<td>Be mindful of others – this might be someone you know</td>
<td>Deep breathing</td>
</tr>
<tr>
<td>Play music / listen to the radio</td>
<td>5x5x5 rule: will this matter in 5 minutes, 5 days, or 5 weeks?</td>
<td></td>
</tr>
<tr>
<td>Make a phone call</td>
<td>Tell yourself to remain calm</td>
<td></td>
</tr>
<tr>
<td>Listen to podcasts</td>
<td>Self-talking (“don’t be the idiot”); Reset “maintain the flow”</td>
<td></td>
</tr>
<tr>
<td>Swearing to release anger</td>
<td>Take personal responsibility</td>
<td></td>
</tr>
<tr>
<td>Focus on elements of the drive (safety, economy etc)</td>
<td>Ignore it – its not worth it</td>
<td></td>
</tr>
<tr>
<td>Leave plenty of time for disruptions</td>
<td>“So what?” if you are late</td>
<td></td>
</tr>
<tr>
<td>Plan journey to avoid congestion / aggression hot spots</td>
<td>Do not take it personally – they may not have intended it</td>
<td></td>
</tr>
<tr>
<td>Use google ETA to show where and how far destination is</td>
<td>Acknowledge the needs of others</td>
<td></td>
</tr>
<tr>
<td>Apologise – use the wave</td>
<td>Remember: “it could be worse”</td>
<td></td>
</tr>
<tr>
<td>Drive in the left lane</td>
<td>Be empathetic of passengers. What are we teaching our kids?</td>
<td></td>
</tr>
<tr>
<td>Telecommute to avoid traffic</td>
<td>Try not to interpret the behaviour of others</td>
<td></td>
</tr>
<tr>
<td>Vent to release anger</td>
<td>Acknowledge that you can contribute to the problem</td>
<td></td>
</tr>
<tr>
<td>Prioritize safety – situations can escalate quickly</td>
<td>Be aware of state of mind before driving</td>
<td></td>
</tr>
<tr>
<td>Use your dash cam (record scene for playback later)</td>
<td>Dissect situation objectively, do not rely on stereotypes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Be empathetic of other drivers: cut them some slack – they may be having a bad day</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Personalise the other driver: what if it was your Mum, Dad, Grandparent, sister etc</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Think of what your partner or kids would say</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lower your expectations of other drivers – assume they will act badly</td>
<td></td>
</tr>
</tbody>
</table>
PART 4  RAD LEARNING OUTCOME EVALUATION

The learning outcome evaluation was conducted after completion of the RAD sessions. Participants were sent a link to an online survey the day they participated in the RAD and asked to complete it within the week. All 94 participants completed the learning outcome evaluation.

RAD LEARNING OUTCOMES

Figure 1 shows the questions asked of participants to measure whether the learning outcomes were achieved. There was a high agreement that all learning outcomes were achieved in the RAD:

- 87% of the participants reported that the RAD assisted them to generate realistic strategies to avoid aggressive driving, provided feedback on the extent of aggressive driving and effectively defined aggressive driving and the consequences.
- 96% agreed the RAD helped them explore reasons why they engaged in aggressive driving.
- 67% agreed that the RAD challenged key beliefs regarding aggressive driving. However, this is to be expected given that the triggers for aggressive driving often relate to the desire to change another person’s driving behaviour. Thus, anger management and aggression mitigation rely on focusing on internal mechanisms to avoid aggression. In doing that, key beliefs may remain the same, but the focus on what to do about it is what the RAD targets.

Participants were also asked to provide any further comments about the learning outcomes. The comments formed four main themes, which were:

- Learned take home strategies (51% of coverage)
- Enjoyed the shared experiences (39% of coverage)
- Raised awareness of the road statistics and risk of crash when aggressive (4%)
- Did not learn anything (16% of coverage)
The first two themes shared a lot of cross-over. In general participants said the shared experiences was a key learning in the RAD, e.g:

“I am not alone”

Further, that discussing triggers and behaviours allowed participants to compare and contrast how they feel and behave on the road with other participants. This allowed a deeper empathy and personalisation of other drivers.

“Other (decent) people are feeling irritated behind the wheel. I’d like to continue to give a wave of thanks to another motorist who moves over to make room for me to pass by. I can make extra effort to be polite to other road users. I will probably be less hasty in tooting, swearing & muttering about the behaviour of other motorists. Even as road users we’re still all imperfect humans trying to do what we think appropriate.”

Many commented on the take-home strategies and needing to make a conscious decision not to react to anger.

“own your own s@#t... if you are an aggressive driver then be open to acceptence of the fact and develop mitigation strategies to deal with it”

“the 5-5-5 rule- first time I ever heard of it, and I liked the stepwise approach to dive into the topic, with subtle nudges to challenge self-perception. Had a lightbulb moment that I actually have not tried any self-regulation strategies prior to this.”

COURSE AND FACILITATOR RATINGS

Overall, the RAD was well received (See Figure 2). Almost all of the participants agreed the content of the workshop was informative (93%), the facilitators met expectations in delivering the program (90%) and the online format facilitated effective delivery (89%).

![Figure 2: Participant ratings of the format and delivery](image-url)
Participants also provided feedback on elements of the RAD they disliked and those they liked. These are presented below.

**Liked.** Key themes included

- **The structure of the program and open discussion (43% of coverage)**

  Key to this was the informal, non-judgmental environment of the RAD. The participant led discussion was well-received and many participants commented on the friendly nature of the facilitators and good balance between participant input, facilitators’ own stories and research evidence.

  “I really liked the interactive approach, being able to exchange ideas, and everybody participating. It felt very non-judgmental which I appreciated as I feel embarrassed by my own behaviour in being too stressed and cranky when driving at times. The friendliness of the ladies running the course and how they made everyone feel welcome and included in the discussions. The flowing exchange of thoughts and strategies. very user friendly”

  “It is easy to do and doesn't feel like a chore since its very relevant. No blaming. It was centred on peer learning rather than an expert saying this is the right way to do something…”

- **Connecting with likeminded drivers and hearing their frustrations (28% of the coverage)**

  Aligned with the group discussion element was the theme that participants enjoyed connecting with other motorists who also feel angry and aggressive some-times. Sharing similar triggers, or hearing different triggers was a positive aspect of the RAD noted by some participants. This supports the comments by many that it was a “safe space” to talk about one’s own behaviour.

  - **The direct alignment with road safety (11% of the coverage)**

  Participants liked the clear alignment with road safety presented at the start of the RAD. Some referred to the applied nature of the findings, in that these will be reported back to road regulators – providing the participants with a sense of contribution to the broader solution. Others liked that the RAD can be adapted for driver education and awareness.

  “It’s very interesting research and it captured my attention because there definitely isn’t any driver training at all when you get your license about anger management or aggression. I liked how it was not only a research program but also driver education. The conversational style was also great”

  - **Evidence-base and psychology behind anger and aggression (12% of coverage)**

  The research and psychological theory underlying anger and aggression was seen as a positive aspect of the RAD by some participants.

  - **Chance to rethink own anger and aggression, formulate strategies (4% of the coverage)**

  “I'm an external/verbal processor so having a forum to think this stuff through helps me to change my behaviour.”

  - **Group diversity and sharing (5% of the coverage)**

**Disliked.** When asked about what they did not like about the RAD, the most common response was “nothing” (43% of the coverage).

The other comments fitted five broad themes:

- **The online forum and group size making it hard to contribute (20% of the coverage)**

  Participants noted that it was often hard to contribute to the discussion, both in larger groups and also when the discussion was dominated by one or two people. This was also mentioned as an artefact of the RAD being on-line, as it is hard to engage all participants and to know when others are wanting to speak.

  “I think the problem with the zoom format is that it is hard to get a word in when people are trying to all speak at once and it is awkward to try and speak up without accidentally talking over the top of someone else but I think that might be more of an issue with zoom than the program itself.”

  “I struggle with zoom because I’m anxious and by the time I’ve hyped myself up to unmute and speak someone else is already talking”

This problem could largely be overcome by smaller group sizes, which would allow the facilitators more time to seek comment from all participants and also offering the RAD in a face-to-face forum in future.
The diversity of the groups (6% of coverage)

Following from the above, some participants also noted the diversity of the groups as a negative aspect of the RAD. In some cases, the biases of the participants related directly to other participants (i.e. heavy goods drivers, newly licensed drivers, or drivers new to Australia). Some mentioned that it was hard to find the time during work time, while others mentioned that conversation tended to be dominated by specific types of drivers and felt their anxieties were not heard. This again suggests the RAD may be beneficial in smaller matched groups

- Not enough time to delve deeply (15% of the coverage).

The second most common criticism of the RAD was the time allocated for the program. Many felt this was not an adequate amount to fully explore strategies, or to delve into underlying factors associated with anger and aggressive driving. Some mentioned the time separation within the RAD could be changed, with less emphasis on the ice-breaker activity and triggers and more time for discussion. This again speaks to the need for smaller groups, which then takes less time for discussion of each component. One participant also mentioned they would like to have seen a follow up session where participants can discuss what strategies they used and whether they worked for them.

- Degree of research presented (10% of the coverage)

Reports were mixed in this regard. One participant did not like the amount of research presented, while other participants would have liked to have seen more research behind the RAD and strategies presented. A couple of participants also mentioned that they disliked the fact that the strategies came from participants and not the facilitators. Thus, there is personal preference for some regarding the role of the evidence-base in the RAD session.

- Some strategies impractical / ineffective (4%)

Four participants reported that the strategies in the RAD seemed too impractical or would not work for them. One reason for this was that many of the strategies were empathy based, which does not resonate with all.

In addition, while 73% of the participants said no elements of the RAD needed changing 27% suggested the following changes:

- Targeted sessions with more of an individual focus (43% of the coverage^2)

This included have groups based on specific characteristics (i.e. levels of anger or aggression / gender). One participant suggested having participants provide a synopsis of the type of driving they do to the tailor the RAD to that type of driving. Likewise, another mentioned allowing (willing) participants to share more personal experiences, which may resonate more with the group. Indeed, this occurred in some of the smaller groups with some powerful stories emerging regarding own experiences receiving aggression, and insights from people who have been first responders dealing with crashes involving children. This suggests smaller group sizes would be more effective for the RAD to allow this open discussion.

Other participants mentioned that this course was voluntary, which means participants have already acknowledged this is a problem. It was suggested this should be compulsory, which would allow this to have a bigger impact. Others suggested including Learner drivers in the sample.

- Time distribution (19% of coverage) – more time needed for discussion of the solutions:

Participants in the larger groups noted that time spent on the icebreakers or triggers left less time for discussion of solutions. In larger groups there was also less opportunity for everyone to contribute. Indeed, as a result of the 10 sessions (ranging in size from 5 – 14) , it was evident smaller group sizes allowed more time and contribution with the optimal group size around eight to ten participants.

- More consideration of broader life stresses (14% of coverage)

This included understanding how life events (i.e. COVID19) and mental health impacts can influence driving and mood while driving. Discussion of how these anger management skills can benefit beyond driving “e.g. a deeper look at why people believe driving is different to the rest of life”

- More research presented about who the “main offenders” and the evidence base behind the RAD (10% of the coverage)

- Provide a summary of strategies to participants and do follow up sessions (10% of the coverage). As a result of this comment, the triggers and strategies sheets (listed in Appendix A.1 & A.22) were sent to all participants.

^2 Coverage = percentage of responses. This does not equal 100 as comments can fit into one or more theme and some comments fit no themes (i.e. NA)
PART 5 EFFECTIVENESS OF THE RAD

To evaluate the effectiveness of the RAD in reducing anger and aggression while driving, questionnaires were administered to the participants before the RAD (baseline), one month after the RAD (follow up 1) and four months after the RAD (follow up 2). These surveys contained items to measure anger and aggression and the follow up surveys also asked about what strategies had been adopted and the success in implementation of the strategies.

Most (82 of 94) participants completed the one month follow up (88%), and 68 of the 82 completed the four month follow up (82%). One participant requested their data be removed due to a change in driving circumstances resulting in a final sample at four months of 67 (72% of the original sample).

To assess whether the groups who did not complete the first (n = 12) or second (n = 15) follow up differed on any key measures, baseline means were compared between all groups (no follow up, one month follow up only, or all follow ups) for age, anger and aggression. There were no significant differences (all p values > .05). The three groups did not differ in terms of gender or RAD participation group either. Thus, for simplicity of comparison, only the anger scores for the 67 participants who completed all three time points are presented in this section (unless otherwise specified).

WAS THE RAD HELPFUL IN MANAGING FRUSTRATIONS AND AGGRESSION WHILE DRIVING?

Almost all participants reported that the RAD had been helpful in managing their frustrations (Figure 3) and aggression (Figure 4) and these were maintained at the four month follow up. For example, 98% of drivers reported some level of helpfulness at month one, with 46% reporting the RAD was somewhat helpful and 23% reporting very helpful for managing frustrations. At month four, 97% of the same drivers reported the RAD was helpful in managing frustrations, with 33% saying somewhat helpful and 40% saying very helpful. Likewise, 95% of drivers found the RAD helpful at reducing their aggression at the one month follow up, with 92% still reporting helpfulness at the four-month follow up. These figures demonstrate the longevity of the strategies generated by participants across the four-month period.

![Figure 3: RAD helpfulness in reducing frustration while driving; using only respondents who completed both follow ups (n = 67).](image)

![Figure 4: RAD helpfulness in reducing aggression while driving; using only respondents who completed both follow ups (n = 67).](image)
WHICH STRATEGIES WERE MOST COMMON?

At the one month follow up, almost all (94%) said they tried at least one of the strategies they generated in the RAD session. At the four-month follow-up 86% were still using the strategies generated in the RAD, 8% had not driven due to COVID restrictions and 6% said they were no longer using the strategies. Reasons for not using them included: forgetting them, needing reminders, and having a shift in attitude as a result of the RAD that means they do not need them. The former could be addressed by using the survey function in Zoom where drivers select from a list of the generated strategies and take a screen shot to remember, or by rehearsing these strategies in visualised trigger situations.

Table 6 shows which strategies were the most adopted by drivers. The strategies most implemented by participants were listening to the radio and the 5x5x5 strategy (50%). Other common strategies were telling yourself to stay calm (43%), to ignore it because it’s not worth it (52%) and to be mindful of others – it might be someone you know (43%). These strategies were still being used by most drivers at the four month follow up, with some drivers adopting them since the follow up.

Table 6: Most common types of strategies used after the RAD

<table>
<thead>
<tr>
<th>Strategy</th>
<th>% used at one month (n = 82)</th>
<th>% used at four months (n = 67)</th>
<th>% of those still using at 4 months</th>
<th>Adopted over the period since the follow up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ignore it – its not worth it</td>
<td>52</td>
<td>44</td>
<td>48</td>
<td>15</td>
</tr>
<tr>
<td>Play music / listen to the radio</td>
<td>50</td>
<td>50</td>
<td>74</td>
<td>13</td>
</tr>
<tr>
<td>5 x 5 x 5</td>
<td>50</td>
<td>46</td>
<td>70</td>
<td>11</td>
</tr>
<tr>
<td>Tell yourself to stay calm</td>
<td>43</td>
<td>45</td>
<td>57</td>
<td>25</td>
</tr>
<tr>
<td>Mindful of others – might be someone you know</td>
<td>43</td>
<td>38</td>
<td>46</td>
<td>22</td>
</tr>
<tr>
<td>Deep breathing</td>
<td>38</td>
<td>26</td>
<td>45</td>
<td>14</td>
</tr>
<tr>
<td>Self-talking – don’t be the idiot</td>
<td>38</td>
<td>40</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>Think of the consequences – avoid a crash</td>
<td>37</td>
<td>38</td>
<td>32</td>
<td>35</td>
</tr>
<tr>
<td>Swearing to release anger</td>
<td>34</td>
<td>35</td>
<td>36</td>
<td>33</td>
</tr>
<tr>
<td>“so what” if you are late</td>
<td>33</td>
<td>26</td>
<td>38</td>
<td>21</td>
</tr>
<tr>
<td>Remember that it could be worse</td>
<td>32</td>
<td>31</td>
<td>46</td>
<td>25</td>
</tr>
<tr>
<td>Do not take it personally – they may not have intended it</td>
<td>32</td>
<td>39</td>
<td>33</td>
<td>39</td>
</tr>
<tr>
<td>Drive in the left lane</td>
<td>31</td>
<td>38</td>
<td>50</td>
<td>33</td>
</tr>
<tr>
<td>Focus on elements of driving</td>
<td>31</td>
<td>39</td>
<td>45</td>
<td>39</td>
</tr>
<tr>
<td>Vent to release anger</td>
<td>29</td>
<td>26</td>
<td>40</td>
<td>28</td>
</tr>
<tr>
<td>Leave plenty of time for disruptions</td>
<td>29</td>
<td>35</td>
<td>36</td>
<td>39</td>
</tr>
<tr>
<td>Plan journey to avoid congestion / aggression hot spots</td>
<td>26</td>
<td>27</td>
<td>29</td>
<td>36</td>
</tr>
<tr>
<td>Apologise – use the wave</td>
<td>25</td>
<td>34</td>
<td>39</td>
<td>39</td>
</tr>
<tr>
<td>Acknowledge that you can contribute to the problem</td>
<td>24</td>
<td>24</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>Acknowledge the needs of others</td>
<td>24</td>
<td>23</td>
<td>39</td>
<td>26</td>
</tr>
<tr>
<td>Be empathetic of other drivers “cut them some slack”, they may be having a bad day</td>
<td>22</td>
<td>34</td>
<td>33</td>
<td>52</td>
</tr>
<tr>
<td>Use google ETA / maps to show where destination is</td>
<td>21</td>
<td>26</td>
<td>24</td>
<td>44</td>
</tr>
</tbody>
</table>
Be aware of your state of mind before driving  & 21 & 11 & 40 & 7  
Lower your expectations of others – assume they will be dangerous or act badly & 21 & 34 & 31 & 58  
Listen to podcasts & 20 & 24 & 45 & 35  
Take personal responsibility & 20 & 34 & 46 & 46  
Prioritise safety: things can escalate quickly & 20 & 36 & 39 & 54  
Self-talk, reset “maintain the flow” & 20 & 9 & 25 & 13  
Be empathetic of passengers – what are we teaching our kids? Be the driver you want them to be & 18 & 18 & 41 & 29  
Make a phone call & 15 & 15 & 31 & 38  
Try not to interpret the behaviour of others & 13 & 19 & 32 & 55  
Personalise the driver, imagine it was your Mum, Dad, Grandparent, Sister, Boss, kids etc & 11 & 21 & 22 & 56  
Dissect the situation objectively (make a deeper evaluation and do not rely on stereotypes) & 9 & 6 & 29 & 29  
Think of what your partner / parents / kids would say & 7 & 14 & 8 & 62  
Pull over / stop driving & 6 & 6 & 25 & 75  
Use your dash cam (record the scene or yourself for playback – do you like what you see?) & 5 & 16 & 30 & 70  
Telecommute to avoid traffic & 2 & 2 & 100 &  
Refocus attention on economy (i.e. fuel efficiency) & 2 & 11 & 14 & 85  

In addition, some respondents had tried other strategies not listed. These included singing “Let it go”, swearing, saying “not much longer”, hanging back and not getting involved, having a conversation with passengers, trying to be the “best driver I can be”, listening to mindfulness tapes, laughing off the situation – at self or other drivers. At the four month follow up, singing and humour were again mentioned. Other quotes included: ‘Everyone deserves to get home safe’; “Just say nothing and do nothing - keeps my wife happy”; and “mainly have to use self-control if others are in the car, especially children”.

These strategies were largely successful; Four months after the RAD, drivers were still using these sometimes (60%) to always (41%). Only 6% reported them not helping reduce anger and aggression, while most said they were somewhat (29%), very (49%) or extremely (6%) successful in reducing anger or aggression.

**Four months after the RAD, 74% of participants who were using the strategies said that they had also helped manage anger outside of driving.**

In addition to understanding whether the RAD was helpful for drivers to reduce frustrations and aggressions, self-reported anger and aggression were measured across the study to understand any changes in scores after participation in the RAD. This was done using a global (single item) measure of anger or aggression level, as well as more detailed validated scales to measure anger propensity and aggressive driving frequency.
**CHANGES IN ANGER WHILE DRIVING**

**Single item measure:** Anger was measured using a single scale asking participants to rate in general their level of anger while driving. Participants selected a value between 0 and 10 with 0 being the lowest and 10 the highest. There was a significant difference in anger scores ($F(2,128) = 9.20$, $p = .003$, $\eta^2_p = .13$). Post hoc tests showed that anger was significantly lower at the four month follow up ($M = 3.91$, $SD = 1.94$) compared to baseline ($M = 4.68$, $SD = 2.32$; see Figure 5.

![Level of anger across the study](image)

*Figure 5: Self-reported level of general anger while driving pre and post the RAD*

**Measure for Angry drivers:** Anger tendencies were measured using the Measure for Angry Drivers scale (MAD; Stephens et al., 2019) that demonstrates one’s tendency to become angry across provoking situations such as danger, travel delays and hostility from other drivers. Across all three, factors scores significantly decreased after the RAD and this decrease was maintained at the four month follow up (see Figure 7.; $F_{\text{danger}}(2,108) = 20.90$, $p < .001$, $\eta^2_p = .25$; $F_{\text{travel}}(2,107) = 13.10$, $p < .001$, $\eta^2_p = .17$; $F_{\text{hostility}}(2,112) = 12.22$, $p < .001$, $\eta^2_p = .22$).

![Measure for angry drivers across the study](image)

*Figure 6: Measure for angry drivers scores pre and post the RAD*
CHANGES IN SELF-REPORTED AGGRESSIVE DRIVING

**Single item measure:** Scores on this item showed that aggression was significantly lower after the RAD (M = 3.49; SD = 2.21) compared to baseline (M = 4.14; SD = 2.16) and they remained significantly lower at the four month follow up (M = 3.32; SD = 2.05) (F(2,128) = 6.16, p = .003, η² = .13; Figure 7).

![Level of aggressive driving across the study](image)

*Figure 7: Self-reported level of aggression while driving pre and post the RAD*

**Driving Anger Expression Inventory.** The driving anger expression inventory short form (Stephens et al., 2014) measures four ways drivers may respond to their anger. These are adaptive constructive ways of dealing with anger; verbal aggression, use of the vehicle and personal physical aggression. As can be seen in Figure 8, verbal aggression (F(2,115) = 9.28, p < .001, η² = .13), use of vehicle (F(2,126) = 10.13, p < .001, η² = .14) and personal physical aggression (F(2,126) = 3.82, p = .024, η² = .06) were all significantly lower after the RAD. Across all three, the means were significantly lower at four months compared to baseline. In contrast, adaptive constructive responses significantly increased from baseline to month one, and remained higher at the final follow up (F(2,126) = 9.96, p < .001, η² = .14).

![Driver anger expressions across the study](image)

*Figure 8: Driving anger expression inventory scores pre and post the RAD*
COMPARISONS BETWEEN 18-25 YEAR OLD DRIVERS WITH OLDER DRIVERS AND ACT DRIVERS WITH NON ACT DRIVERS

Given the original aim of the study was to support the reduction of anger and aggression in drivers aged 18-25 in the ACT, additional analyses were conducted to understand whether: a) the changes noticed after the RAD differed for drivers aged 18-25 years (compared to older drivers; and b) the changes noticed after the RAD differed for drivers in the ACT. These were conducted separately due to the low number of participants (only 6% of the sample were aged 18-25 years and drove in the ACT).

<table>
<thead>
<tr>
<th>Age category (years)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-25</td>
<td>26%</td>
</tr>
<tr>
<td>Older drivers</td>
<td>74%</td>
</tr>
<tr>
<td>Drive in the ACT</td>
<td>%</td>
</tr>
<tr>
<td>Yes</td>
<td>41%</td>
</tr>
<tr>
<td>No</td>
<td>59%</td>
</tr>
</tbody>
</table>

There were no differences in anger or aggression changes for drivers in the ACT, compared to those who do not drive in the ACT (ps > .05). There were also no differences in anger or aggression changes between drivers aged 18-25 with older drivers (ps > .05) with the exception that younger drivers (18-25) had significantly higher anger over danger from others at baseline (p = .028) but after the RAD, anger scores did not differ at either follow up ($F(2,105) = 3.60, p = .035$, $\eta^2 = .06$). Thus, the RAD appears to have a similar effect for all aged drivers and for drivers in the ACT compared to other jurisdictions.

![Figure 9: Anger over danger from others pre and post RAD](image-url)
PART 6       STAKEHOLDER RAD AND NEXT STEPS

A stakeholder RAD workshop was conducted in July with road safety regulators to present the RAD and discuss ideas for broader implementation. Attendees represented the ACT Road Safety Fund, National Road Safety Trust, Transport Accident Commission (VIC), Road Safety Commission (WA), Transport and Main Roads (QLD) and Road Safety Victoria. As a result, an info-graphic was created (Appendix A.3). Conversations with some regulators will resume upon finalisation of the project.

We recommend that a train-the-trainer workshop is required for a broader roll-out and have designed the facilitation guide to support this (see Appendix A.4). Further funding is also being sought for objective measurement of the RAD outcomes and to develop the RAD into an online interactive program able to have broader reach.

PART 7       DISCUSSION

The results of this project demonstrate the potential of the RAD to support drivers in reducing their anger and aggressive driving. Changes were evidenced in self-reported anger and aggression after the RAD compared to before the RAD. It is important to note that across all measures the scores at month four were significantly lower than at baseline. In most cases, scores dropped significantly at month one, and were either maintained at the lower level or decreased further by month four. For example, general anger showed a decrease in scores that did not reach significance until month four. It may be that more time was needed for some drivers to adopt strategies under specific circumstances, which is reflected in the decrease apparent at four months, but not at one month. These findings provide preliminary support for RAD in producing longer term solutions to anger and aggression.

The learning outcomes evaluation results highlighted elements of the RAD that could be adjusted in future applications. These could include capping groups at smaller numbers (e.g. 8 to 10) and allowing more time in the program (extending to 3 hours with a break instead of 2 hours). Offering sessions outside of business hours would also increase the scope of participation. However, overall the evaluation showed the effectiveness of the RAD delivery in meeting learning outcomes and assisting drivers to generate their own strategies to deal with their anger and aggressive driving.

The triggers and strategies that emerged during the sessions provide valuable information for education campaigns to support safer driving. For example, many participants enrolled in the RAD because they saw their children adopting their own angry behaviours while driving. This speaks to the importance of campaigns such as the TAC “what kind of driver are you raising campaign?” and conjointly providing solutions for drivers who want to change their behaviour. So to, as one participant in the stakeholder workshop mentioned, the 5x5x5 strategy could be easily adopted in to a road safety campaign with good alignment to other initiatives such as the “wipe off five”; “under .05” and “above 5 to drive”, related to speed, BAC and blood glucose levels respectively.

It should be noted that the current study had some limitations. There was a 28% attrition rate from RAD participation to survey completion. There were no differences for age, gender, RAD group, or anger or aggression scores observed across the group who remained and those who dropped out. However, it cannot be ruled out that those who did not complete follow up questionnaires may not have perceived that the RAD was effective. Further, the recruitment procedure also means that the sample was focused on drivers in the ACT and younger drivers, so the findings may not be representative of all drivers experiencing anger or aggression. The fact that participants volunteered to participate, also indicates the participants were open to addressing their anger or aggression problem. Such effectiveness may not be demonstrated in a sample unwilling to address this issue.

Notwithstanding this, this project provides evidence of the RAD in supporting safer driving behaviour. These types of programs help drivers find solutions for safer driving that resonate for them and their circumstances. Future research is needed to obtain objective measurements of behaviour and to support broader roll-out of the program.
PART 8 REFERENCES


APPENDIX A

A.1 Triggers for anger and aggression identified during the RAD – handout provided to participants
TRIGGERS Of Aggressive Driving

Internal

- Poor journey planning: running late, unfamiliar route
- Existing mood: stressed, tired, hungry, angry

External

**Within the road network**

DANGER FROM OTHERS
- Slower drivers especially in overtaking lanes
- Unpredictable/indecisive behaviour from drivers
- Reckless/dangerous behaviour from drivers (e.g. tailgating, being on their phone)
- Illegal behaviour of others

HOSTILITY & DISCOURTESY
- Discrimination based on L or P plate/type of vehicle
- Aggression from drivers
- Discourteous behaviour from others (lack of driving etiquette)

TRAVEL DELAYS
- Having to divert route
- Poor infrastructure, certain road environments/design (i.e. roundabouts)

OTHER
- Certain types of vehicles or road users
- Car-parks and parking
- Known dangers (i.e. animals)
- Interaction between different sized vehicles

**Within the vehicle**

- GPS failure
- Additional interaction due to traffic flow (i.e. having to drop to 1st gear, truck brakes, etc)
A.2 Strategies for anger and aggression identified during the RAD – handout provided to participants
Change Things Up

Before driving

- Plan the drive: calculate route (google maps)
- Allow time
- Prepare the car: music, food, gum
- Telecommute/change start end times
- Be aware of state of mind: our stresses travel with us

Within the road network

- Pull over, stop driving
- Drive in left lane
- Acknowledge the needs of other drivers
- Avoid triggering routes or drivers

Within the vehicle

- Play music, listen to podcasts
- Call someone
- Deep breathing
- Swearing
- Vent to a passenger
- Use the dashcam
Rethink It!

**Participants found most helpful**

- **5x5x5 rule**: will this matter in 5 minutes, 5 days or 5 weeks? Don't spend 5 minutes stressing about something that won't matter in 5 days or 5 weeks.

**Other useful strategies**

- **Personalise the other driver**: in every car is another person.
- **It's not worth the cost (safety or economic)** of crash or insurance claim.
- **Relax, let it go**: sing — even if you are bad at it.
- **Be empathetic of other drivers**: they may be having a bad day, “cut them some slack.”
- **Be aware of mood**: we drive as well feel.
- **Self-talk/self monitor**: “be alert”, “stay calm”, “do not break the flow”, “reset.”
- **Refocus attention on economy or safety**.
- **Do not take on stereotypes**: anger makes us lazy.
- **What would your significant other (parents, kids, friends) say?**
- **Use humour**: is this the Truman show?
A.3  Info graphic designed for the RAD – provided to stakeholders after the stakeholder RAD
# Reducing Aggressive Driving (RAD) Program

## Overview

**Background**

Aggressive driving is a community problem. Approximately nine out of every ten drivers report expressing their anger aggressively while driving. This can be verbally, risky use of the vehicle, or through physical means. As a driver’s crash risk is considerably increased when they are aggressive, identifying paths to reduce aggression is of critical importance to improving road safety.

**What is the RAD?**

The RAD is a behaviour change program designed to reduce aggression in drivers. Because not all behaviours are the same and not all drivers will react the same way in the same situation each time, the RAD focuses on instilling knowledge, as well as modifying the key psychological aspects motivating driver behaviour.

**How is it delivered?**

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>The road toll and defining anger and aggression</td>
<td>Explore reasons for engaging in anger and the triggers for aggression</td>
</tr>
<tr>
<td>Provide feedback on a survey of anger and aggressive driving</td>
<td>Generate strategies to manage the triggers of anger and aggression</td>
</tr>
</tbody>
</table>

## What do participants think of the program?

- Agreed that RAD helped them generate realistic strategies to avoid aggressive driving: 87%
- Said they tried the strategies discussed in the RAD: 94%
- Said RAD has been helpful in managing frustrations while driving: 96%
- Said RAD has been helpful in reducing aggression while driving: 93%

**Following the program:**

“I really liked the interactive approach, being able to exchange ideas, and everybody participating. It felt very non-judgmental which I appreciated as I feel embarrassed by my own behaviour in being too stressed and cranky when driving at times.”

**One month on:**

“I’ve actually surprised myself at how many situations I’ve been in that used to make me FURIOUS, that I’m now like “oh well” about. I’ve become so much calmer driving, to the point that a friend noticed!”

“I didn’t realise how much I’d get out of the course... but to realise that it’s had an impact on me BEYOND driving, I’m pleasantly surprised!”

---

The RAD was made possible with assistance from the ACT Road Safety Fund.

For more information, please contact Dr Amanda Stephens: amanda.stephens@monash.edu

+61 3 9905 1191
A.4 Facilitator Guide for the RAD
Reducing Aggressive Driving (RAD) program: Facilitation guide
CONTENTS

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    COMPONENT TWO: Feedback on a survey of anger and aggressive driving ................................................................................. 5
    COMPONENT THREE: Exploring the triggers of anger and aggression while driving ................................................................. 6
    COMPONENT FOUR: Generating strategies to manage anger and subsequent aggression .......................................................... 6
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THE RAD PROGRAM

The RAD is a behaviour change program designed to reduce anger and aggression in drivers. The RAD has been developed by Monash University Accident Research Centre and the project was made possible with the assistance of the ACT Road Safety Fund.

Fundamental to the RAD is the idea that behaviour is not a singular concept – thus, interventions to improve road safety, need to understand that not all behaviours are the same and not all drivers will react the same way in the same situation each time. A driver when frustrated may tailgate the car who merged in front, while another driver, in the same situation, may choose to simply ease off their speed. The RAD acknowledges the inherent differences in human behaviour and focuses on instilling knowledge, as well as modifying the key psychological aspects motivating safer driver behaviour. The key behaviour modification techniques used to motivate safer on-road behaviour include feedback, goal setting and group discussion.

The RAD aims to:

- Provide relevant feedback to participants on the extent of anger and aggressive driving in Australia;
- Distinguish between anger and aggressive driving and outline the risks associated with aggressive driving;
- Explore the triggers for anger and subsequent aggression for each participant;
- Challenge key beliefs leading to, or associated with, anger and aggressive driving;
- Generate realistic strategies to avoid becoming angry or aggressive while driving; and
- Ensure that each group member has identified at least one strategy could be used to avoid situations that place them at risk of aggressive driving in the future.

The RAD is delivered in one session, via Zoom (or equivalent online platform), that lasts for 2-hours. The RAD is structured into four components, in the following order:

1. The road toll and defining anger and aggression
2. Provide feedback on a survey of anger and aggressive driving
3. Explore reasons for engaging in anger and triggers for aggression
4. Generate strategies to manage the triggers of anger and aggression

Group sizes of between 8 to 10 are recommended to optimise group discussion. Video camera for all participants also encourages group discussion.
The training program components are delivered using the following structure.

### SETTING THE SCENE

<table>
<thead>
<tr>
<th>Introduction to the RAD</th>
<th>Timing</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slides 1 – 5</td>
<td>Up to 35 minutes depending on group size</td>
<td>Introduction and setting the scene for the program. Introductions and ice-breaker activity involve each participant introducing themselves and mentioning what motivated them to sign up for the session.</td>
</tr>
</tbody>
</table>

### COMPONENT ONE: THE ROAD TOLL AND DEFINING ANGER AND AGGRESSION

<table>
<thead>
<tr>
<th>The road toll and defining anger and aggression</th>
<th>Timing</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Slides 6 – 9</td>
<td>5 minutes</td>
<td>There are two main points discussed. First, the road toll is discussed. Focus is also given to the significant number of people each year who sustain serious injuries on the road. These injuries are often life changing and can have repercussions for the person injured, their loved ones and their community for years after the crash has occurred. The second point discussed is intervention to reduce the road toll. It is stated that Australia has a focus on achieving zero serious injuries and deaths on the roads. This is referred to as vision zero. It is mentioned that it is for this reason programs like these have been funded.</td>
</tr>
<tr>
<td>Slide 10, Defining anger and aggression</td>
<td>5 minutes</td>
<td>A main point of this slide is the fact that anger is a natural response to a perceived threat. This threat may be safety related or goal related. As driving is a goal orientated task (i.e. I want to get to my destination quickly, or safely, or cost effectively, or comfortably etc), it is easy for these goals to get interrupted due to the nature of the driving environment (busy, dangerous, shared roads etc). Anger is likely to be stronger when we feel that someone has actively and illegitimately blocked our goal. Another point of discussion is that because of the complexity of the driving task, and the speed with which we must make judgements about the situation, we are likely to misinterpret the behaviours of others as being provocative or illegitimate or rely on previous stereotypes related to other drivers. Thus, we are more likely to misattribute blame to others and this gets worse when we are already angry. The third discussion point is that we only act aggressively when we feel that this response will achieve a good outcome (i.e. reducing anger, or removing the problem). Thus, aggressive driving is often the result of feeling that the situation can be controlled through this behaviour. We tend to overestimate this control when we are angry. The fourth discussion point is the three ways we can express anger. As we would expect the less severe are more common (i.e. Up to 80% of people will gesticulate or honk when angry). The final discussion point is about the risk associated with being aggressive. Naturalistic studies have shown that the odds of being in a crash increase significantly when aggressive. Depending upon the action (i.e. Speeding, tailgating or general aggression), this can be 12-fold to 35-fold. To put this into perspective, driving impaired by drugs or alcohol or fatigued have similar odds (i.e. 35-fold).</td>
</tr>
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</table>
**COMPONENT TWO: FEEDBACK ON A SURVEY OF ANGER AND AGGRESSION DRIVING**

<table>
<thead>
<tr>
<th>Introduction to the RAD</th>
<th>Timing</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slides 11 – 17</td>
<td>5 minutes</td>
<td>The survey recruitment and sample are discussed in this slide. This survey was conducted in the ACT in 2019 and data were collected online in development of the RAD program. This was funded by the ACT Road Safety Trust in 2019. These slides describe the sample characteristics of the survey. The gender distribution is good, and important as we know that there are differences between males and females in terms of anger experienced and aggressive responses. Traditionally, when there are gender differences women tend to report more anger, but males report more aggression. The sample also had a good representation of age groups, as we know anger and aggression tend to be lower in older drivers. Work driver representation was also good as anger and aggression are likely to be context specific.</td>
</tr>
<tr>
<td>Sample demographics</td>
<td></td>
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</table>

| Slides 18 – 21          | 5 minutes | The survey results are discussed in these slides. On slide 18, the results relating to self-reported anger tendencies are discussed. Participants were asked what makes them angry and what they do when angry. The scale used to measure anger tendencies uses 23 potential situations and respondents’ rate how likely they are to be angered in each one (one a scale of 1 – 5; low to high). These items group into three broad types of anger-provoking situations: Danger posed by others, hostility from others and travel delays. As expected, danger poses the most anger – makes sense given anger is a natural response to threat. Hostility and discourtesy from others is also relatively anger provoking – particularly if this is seen as uncalled for. Travel delays also posed some anger but less than the other types of situations. This makes sense given that the first two are less able to be planned ahead for (i.e. they are more discrete events). On Slide 19 the main point of discussion is the comparison of the ACT sample with a broader Australian sample. The pattern of what makes drivers angry and level of anger are largely similar to data collected (primarily from Vic and QLD). Slide 20 shows what drivers do when angry. This was measured with 15-items each representing a type of response (i.e. honk my horn) and respondents report how frequently they do each one when angry (scale is 1 – 4; almost never to always). The main point of discussion is that most commonly, drivers try to engage in positive ways to deal with anger (see adaptive constructive: 2.71 out of 4) but sometimes drivers react with verbal aggression, and use of the vehicle (i.e. tailgating). The least frequent was personal physical (i.e. trying to engage in a physical fight). The main point here is that most times, drivers do not set out to be aggressive and when angry they mostly react calmly or tell themselves not to worry about it. But for some drivers, on some days there is a unique set of circumstances that leads to them reacting aggressively when angry. This is what the RAD is about, what are these circumstances? Slide 21 shows that these patterns of responses are similar across Australia and in other similar networks (in the UK and Ireland). |
| Survey results          |        |             |
Scenario Timing Description

Slides 22 – 29 5 minutes Based on the results of the survey, a scenario was created to showcase a typical scenario that triggers the response of anger and aggression. The scenario involves a young male waking late and realising he is running late for a meeting. Because he is late, he has got peak hour traffic. While he is stuck in traffic, thinking about his meeting, he gets cut-off by another vehicle. The scenario depicts the driver feeling angry and subsequently shows a sign of aggression by tailgating the offending driver.

This scenario is intended to generate group discussion. Participants are asked to firstly reflect on how the scenario makes them feel and, in particular, do the triggers resonate with them. Following this discussion, participation are asked to discuss their own triggers of angry and aggressive driving, including pre-drive and whilst driving (see next slides).

COMPONENT THREE: EXPLORING THE TRIGGERS OF ANGER AND AGGRESSION WHILE DRIVING

What are the triggers Timing Description

Slides 30 – 31 Up to 20 minutes Using the scenario as an ice-breaker, participants are asked what their triggers are for anger and aggression. This can be combined or separated into what makes you angry, and when are you aggressive? (see appendix for triggers from previous sessions).

The facilitator takes notes of these triggers, particularly if there are people who have specific high-anger triggers and returns to these in the strategy section.

Group discussion is encouraged for all participants and input and stories from the facilitators re their own anger has been received well. Where possible literature is referred to, to support some of these triggers (relevant papers are in the reference list).

Feedback from the RAD sessions has suggested that less time should be spent on the triggers than the strategies.

COMPONENT FOUR: GENERATING STRATEGIES TO MANAGE ANGER AND SUBSEQUENT AGGRESSION

Generating strategies Timing Description

Slide 32 Up to 40 minutes This component is where participants generate strategies to help avoid or reduce their anger and aggression while driving. The facilitator leverages these around the triggers, and participants are asked what strategies may work for them.

The facilitator takes notes of these strategies and refers back to people who have specific high-anger triggers to help identify which strategies may be effective for them.

Group discussion is encouraged for all participants. Where possible literature is referred to, to support some strategies. Before session end, the facilitator asks all participants if they have at least one strategy they will be willing to try.

NEXT STEPS

Next steps Timing Description

Slide 33 1 minute Discussion of next steps, which might be use of strategies or any follow up required, emails for further information.
**FACILITATOR REQUIREMENTS**

Facilitators will be required to have participated in a Train the Trainer program. This will ensure consistency in delivery across the RAD sessions.

This guide has been created to support facilitation of trained trainers.

**FEEDBACK FROM PREVIOUS RAD SESSIONS**

Feedback from previous RAD sessions has shown participants enjoyed:

<table>
<thead>
<tr>
<th>Key Dislikes</th>
<th>Key Likes</th>
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<tbody>
<tr>
<td><strong>On-line format and larger groups made it harder to contribute</strong></td>
<td><strong>Structure of the program and open discussion</strong></td>
</tr>
<tr>
<td>This was evident in groups larger than 10.</td>
<td>“I really liked the interactive approach, being able to exchange ideas, and everybody participating. It felt very non-judgmental which I appreciated as I feel embarrassed by my own behaviour in being too stressed and cranky when driving at times.”</td>
</tr>
<tr>
<td>“I struggle with zoom because I’m anxious and by the time I’ve hyped myself up to unmute and speak someone else is already talking”</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Group diversity</strong></th>
<th><strong>Group diversity</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>This was also due to dominant personalities that need to be managed in a group setting.</td>
<td>Hearing the point of view from different road users.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Not enough time to delve deeply</strong></th>
<th><strong>Connecting with likeminded drivers</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be overcome by ensuring enough time on strategies and triggers within smaller groups. This will allow some anger beliefs to be challenged further.</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Some strategies may be impractical for people not empathy-based</strong></th>
<th><strong>Direct alignment with road safety</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be overcome by encouraging a variety of different type of strategies and promoting goal setting among all participants based on what works for them.</td>
<td>Many people do not realise the risks associated with these behaviours.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Balance of research (too much / too little)</strong></th>
<th><strong>Evidence base and psychology behind behaviour</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall participants liked the evidence base supporting their triggers and potential strategies.</td>
<td>“It’s very interesting research and it captured my attention because there definitely isn’t any driver training at all when you get your license about anger management or aggression. I liked how it was not only a research program but also driver education. The conversational style was also great.”</td>
</tr>
</tbody>
</table>
## ASSOCIATED REFERENCES

<table>
<thead>
<tr>
<th>Slide</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Slide 6</strong>&lt;br&gt;The road toll</td>
<td><a href="https://www.bitre.gov.au/publications/ongoing/road_deaths_australia_monthly_bulletins">https://www.bitre.gov.au/publications/ongoing/road_deaths_australia_monthly_bulletins</a></td>
</tr>
<tr>
<td><strong>Slide 7</strong>&lt;br&gt;Serious injuries toll</td>
<td><a href="https://www.bitre.gov.au/publications/ongoing/road_deaths_australia_annual_summaries">https://www.bitre.gov.au/publications/ongoing/road_deaths_australia_annual_summaries</a></td>
</tr>
</tbody>
</table>
| **Slides 18 – 21**<br>Results from initial survey compared to previous research | Stephens, A. N., Lennon, A., Bihler, C., & Trawley, S. (2019). The measure for angry drivers (MAD). *Transportation research part F: traffic psychology and behaviour, 64*, 472-484.  
<table>
<thead>
<tr>
<th>Slide</th>
<th>References</th>
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</thead>
</table>
APPENDIX A: TRIGGERS IDENTIFIED IN PREVIOUS RAD SESSIONS

TRIGGERS of Aggressive Driving

INTERNAL

- Poor journey planning: running late, unfamiliar route
- Existing mood: stressed, tired, hungry, angry

EXTERNAL

WITHIN THE ROAD NETWORK

Danger from Others
- Slower drivers especially in overtaking lanes
- Unpredictable/indecisive behaviour from drivers
- Reckless/dangerous behaviour from drivers (e.g. tailgating, being on their phone)
- Illegal behaviour of others

Hostility & Discourtesy
- Discrimination based on L or P plate/type of vehicle
- Aggression from drivers
- Discourteous behaviour from others (lack of driving etiquette)

Travel Delays
- Having to divert route
- Poor infrastructure, certain road environments/design (i.e. roundabouts)

Other
- Certain types of vehicles or road users
- Car-parks and parking
- Known dangers (i.e. animals)
- Interaction between different sized vehicles

WITHIN THE VEHICLE

- GPS failure
- Additional interaction due to traffic flow (i.e. having to drop to 1st gear, truck brakes, etc)
APPENDIX B: STRATEGIES GENERATED IN PREVIOUS RAD SESSIONS

STRATEGIES
to Avoid Aggressive Driving

CHANGE THINGS UP

BEFORE DRIVING

- Plan the drive: calculate route (Google Maps)
- Allow time
- Prepare the car: music, food, gum
- Telecommute/change start end times
- Be aware of state of mind: our stresses travel with us

WITHIN THE ROAD NETWORK

- Pull over, stop driving
- Drive in left lane
- Acknowledge the needs of other drivers
- Avoid triggering routes or drivers

WITHIN THE VEHICLE

- Play music, listen to podcasts
- Call someone
- Deep breathing
- Swearing
- Vent to a passenger
- Use the dashcam

RETHINK IT!

PARTICIPANTS FOUND MOST HELPFUL

- 5x5x5 rule: will this matter in 5 minutes, 5 days or 5 weeks? Don’t spend 5 minutes stressing about something that won’t matter in 5 days or 5 weeks.
OTHER USEFUL STRATEGIES

- Personalise the other driver: in every car is another person
- It's not worth the cost (safety or economic) of crash or insurance claim
- Relax, let it go: sing — even if you are bad at it
- Be empathetic of other drivers: they may be having a bad day, “cut them some slack”
- Be aware of mood: we drive as well as feel
- Self-talk/self-monitor: “be alert”, “stay calm”, “do not break the flow”, “reset”
- Refocus attention on economy or safety
- Do not take on stereotypes: anger makes us lazy
- What would your significant other (parents, kids, friends) say?
- Use humour: is this the Truman show?
Further information

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