From taking direction to taking control

Research report 1

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Driving Standards Agency (DSA)

Feasibility of Introducing a Situational Judgement and Independent Driving Test Element into the Driver Training and On Road Assessment Protocol

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Executive summary

Novice drivers have been over-represented in road casualty statistics of Great Britain (GB) and other countries for many years. The fact that a considerable body of research evidence suggests that traditional driver training does not reduce novice drivers' accident liability. There has been some national and international research into driver training and ways of improving it (e.g. the EU projects GADGET (Siegrist, 1999) or TRAINER (Hoeschen et al., 2001)). The emerging findings indicate the need to address higher order skills such as independent decision making or hazard perception and management skills in both training and testing to successfully reduce newly qualified drivers' accident risk. This development has lead to revisions and revamping of driver training and testing systems in several countries, such as the introduction of multi-phasic training in Austria or of additional elements into the driving test in the Netherlands.

In GB the Driving Standards Agency Research is considering the introduction of independent driving exercises and situational judgement testing into the practical driving test (and therefore driver training). Independent driving subsumes driving tasks that require learners to complete a task such as following road signs to a particular destination without continuous advice or guidance from the instructor or examiner. Situational judgement elements require the learner to demonstrate understanding of road hazards by verbally identifying them before or after completing a particular driving situation.

In the current study, the *practical* feasibility of including independent driving and situational judgement elements in the practical driving test was assessed with a sample of 100 test-ready learner drivers, 24 Approved Driving Instructors (ADIs) and four DSA examiners. The study required the learner drivers who were accompanied by their driving instructors to complete a driving event at the DSA facility in Cardington. The driving event consisted of a series of three independent driving tasks, and two situational judgement tasks, interspersed with 'normal' driving under the instruction of the DSA examiner, as during a normal driving test.

The new tasks tested in the study were as follows:

Independent driving:

1. **Following verbal directions**: Learners were given a short number of directions to follow as if from someone they had stopped and asked. They then followed these directions from memory while driving.

2. **Turn the vehicle in the road**: Learners were asked to imagine that they realised they were going the wrong way, and to turn the car around in the road using a method of their choice.

3. **Following road signs**: Learners were asked to follow road signs to a local town for a period of time.

Situational judgement:

4. **Situation judgement questions before a situation**: When pulled up at the side of the road before a bend in the residential road ahead (with many parked cars and side-entrances), learners were asked to list the risks and hazards they would consider before driving through the situation.

5. **Situational judgement questions after a situation**: Learners were asked to describe the hazards and risks they had considered when negotiating a roundabout, after they had pulled up on the side of the road having negotiated the roundabout.

Examiners rated the driver performance (driving faults, and serious/dangerous faults on DL25 forms) from all components of the drive (including normal driving and the three independent driving exercises), which served as the main performance criterion. For the two situational judgement tasks, the quality of a delayed verbal commentary (either prior to or after completion of the task) on the hazards in a particular road situation was rated by two DSA examiners.

Performance data were supplemented with quantitative and qualitative data from a post-drive questionnaire and short interview with drivers. Similar questionnaire and interview data were collected from three DSA examiners who served as 'mock' examiners on the driving event as well as from the Approved Driving Instructors (ADIs) who supplied candidates and were present in the vehicle as passengers during the driving event.

Data analysis and presentation of findings were structured by research questions that would allow the DSA to assess the feasibility of inclusion of the new components into the current testing (and training) system.

1. What impact do the independent driving/situational judgement exercises have on the driving performance of learner drivers, under 'test like' conditions?

2. How relevant to 'real driving' are the independent driving/situational judgement exercises seen to be?

3. What are the perceived advantages and benefits of the independent driving/situational judgement exercises?

4. What are the perceived difficulties and challenges associated with the independent driving/situational judgement exercises, including practical implications for training and examining?

5. Which characteristics of drivers impact on performance and perception of the independent driving/situational judgement exercises?

Independent driving – summary findings

Learner drivers found the independent driving exercises (in particular the 'following road signs' exercise) challenging, and changes to the training received by learner drivers are recommended before any of the independent driving exercises are introduced into GB's driving test.

Error rates and workload ratings suggested that learner drivers found the independent driving exercises and particularly, the 'following road signs' exercise very difficult. Error rates in this exercise were five times higher than during 'normal' driving. Error rates in the other two independent driving exercises were the same as during normal driving, apart from the fact that in the 'following verbal directions' exercise learners made significantly fewer major errors compared to normal driving, but significantly more minor errors. It is possible that the decreased major errors in the following verbal directions task are a result of the exercise enabling better forward planning by learner drivers.

The inclusion of the three independent driving tasks clearly affects learner's performance: we examined how many drivers who would have passed the current driving test based on their 'normal' driving performance would have failed based on the number of major errors made in one of the independent driving exercises. Out of 28 participants who would have passed their driving test based on their performance under 'normal' driving conditions, 16 committed at least one major error in the 'following road signs', two did so in the 'following verbal directions', and four committed major errors in the 'turn vehicle in the road' exercises.

When these numbers are related to the pass-rates in GB's practical driving test, they suggest that the current pass-rate would drop from 42% to 18% if the 'following road signs' exercise were introduced without any changes to training, and to 39% and 36% with the similar introduction of the 'follow verbal directions' and 'turn the car in the road' exercises. The introduction of all three exercises without changes to the content of current driver training would lead to a pass-rate of 13% for the driving test.

There are some limitations of the current study that restrict the degree to which the performance findings can be generalised. Firstly the independent driving exercises

are confounded with road section, meaning that performance differences may have been due to road section rather than task difficulty. Secondly there are insufficient data from minority groups to ascertain how the new exercises would impact specifically on the performance of these groups.

Despite the objective difficulty of the independent driving exercises, they are perceived to be relevant for 'real driving' by learner drivers, ADIs and DSA examiners. Perceived benefits include greater autonomy in decision making, giving a flavour of and preparing for later solo driving. Thus, if introduced after suitable evolution of driver training in GB, acceptance is likely to be high.

Learner drivers, ADIs and DSA examiners suggested that the current test was insufficient to prepare candidates for the challenges of 'real driving'. They felt that the independent driving tasks had the potential to support learner drivers in their transition from being an accompanied learner driver to being a solo driver, as they encouraged them to exercise their independence, autonomy and choice. In the mock test environment, the trialled elements were reported to remove external cues from examiners and instructors and to allow the assessment of participants' ability to drive safely independently.

Learner drivers suggested that the new exercises addressed the social aspects of driving, facilitated their awareness of the road and raised awareness for taking responsibility for one's driving. Therefore, incorporating the new independent driving tasks in the driver training and testing would teach candidates goals and context of driving (Level 3 of the GDE matrix) and further gain appreciation for the goals for life and skills for driving (Level 4 of GDE matrix).

Despite the perceived difficulty of the independent driving tasks, learner drivers advocated the inclusion of these new tasks in the driver training and assessment protocol. Participants felt that adequate training would help them improve on the tasks.

Reported practical barriers to introducing the independent driving exercises in training and testing included the need for additional training time dedicated to the new elements, a danger of reducing the manoeuvring repertoire of learners, memory dependence of the 'following verbal directions' task and difficulties for non-native speakers and learners with learning difficulties, particularly on the 'following verbal directions' task.

Learner drivers reported difficulties with remembering verbal directions, with independent decision making, and with multi-task (driving and following directional signs simultaneously); they felt that the exercises (in particular the 'following road signs' exercise) negatively affected their driving performance.

ADIs suggested that the 'following verbal directions' task was memory dependent and that nervous and anxious candidates would struggle with this task under test conditions. Further concerns addressed the need for additional training time required to prepare the learners for the new exercises and the potential loss of manoeuvring skills, if learners were allowed to perform manoeuvres of their choice rather than demonstrating competence in a prescribed list of manoeuvres.

Learner drivers who considered themselves dyslexic (n=2) reported that they found the independent driving exercises challenging (especially 'following road signs' and 'following verbal directions'). ADIs suggested that training people with learning disabilities or language difficulties to carry out the independent driving exercises would be challenging.

The independent driving exercises seem to be 'fair' in that they do not appear to disadvantage people on the basis of age, gender, ethnicity, or personality. HOWEVER, more work is needed to understand the potential effects of language or learning difficulties on performance in the independent driving exercises.

None of the following characteristics of learner drivers were found to be associated with error rates, in any of the independent driving exercises: age, gender, personality variables, ethnicity, or previous experience. Thus we can conclude that the independent driving exercises were 'fair' in that the difficulty associated with the exercises was not confined to specific 'types' of people.

Due to the low numbers of participants with language difficulties or learning disabilities in the study sample, it is not possible to conclude with any confidence the likely impact of these factors on performance in the exercises. Further work will be needed to establish if and how such individuals will need to be supported.

Situational judgement – summary findings

Learners can give appropriate answers to the situational judgement exercises when stopped at the roadside.

The quality of the answers given (as rated by two DSA examiners) is just above 'average' on a five-point scale (where 1=extremely poor and 5=extremely good), and is, in line with expectation, significantly higher for the 'before' exercise compared to the 'after' exercise. Learners thus seem to be able to identify and verbalise relevant hazards in the road environment.

Overall, the situational judgement exercises are not perceived as being very relevant to 'real driving'.

Although there are some perceived benefits, such as helping learners to plan ahead and to identify risks, they are outweighed by the perceived disadvantages of repeating content already covered more effectively elsewhere, impairing learners' performance, and being susceptible to bias by pre-learned answers and increasing test anxiety. Most ADIs felt, however, that situational judgement exercises should form part of training.

Overall, the situational judgement tasks were not considered relevant to 'real driving' because of the artificial situation of stopping participants to assess their hazard awareness skills. However, the situational judgement tasks were seen by learners and ADIs as encouraging learner drivers to plan ahead and be aware of hazards and risks on the road. In general, describing hazards and risks before the situation was considered more useful than describing the situation afterwards.

Learner drivers, ADIs and DSA examiners suggested that the situational judgement tasks had detrimental effects on driving performance, as some of the learners dwelled on their hazard commentary when driving on after the exercise. Interviewees also felt that these tasks had the potential to contribute to test anxiety.

The general consensus among learner drivers, ADIs and DSA examiners was that it was not practical or useful to include the situational judgement tasks in the practical driving test—not least because they will be difficult to assess objectively given the lack of standardisation of situations. However, these exercises were useful to encourage new drivers to consider hazards on the road and should be part of driver training.

The situational judgement exercises seem to be 'fair' in that they do not appear to disadvantage people on the basis of age, gender, and ethnicity. However, some effects were found for personality—more work is needed to elucidate the personality findings. More work is also needed to understand their potential effects on those learner drivers with language or learning difficulties.

None of the following characteristics of learner drivers were found to be associated with the quality of answers given to either of the situational judgement exercises: age, gender or ethnicity. Thus we can conclude that the independent driving exercises were 'fair' in this respect—the difficulty associated with the exercises was not confined to specific 'types' of people in terms of these variables. However, people who were either more extraverted or less agreeable did give better answers to the 'after' exercise.

Due to the low numbers of participants with language difficulties or learning difficulties, it is not possible to assess with any confidence the impact of these factors on performance in the exercises. Further work on these aspects will be needed to establish if and how such individuals will need to be supported.

Recommendations relating to independent driving:

The current study has identified independent driving tasks as promising for inclusion in future driver training and testing. Further work is needed to understand how the training of learner drivers is to change to equip them with the skills to perform workload- and distraction-inducing tasks such as the independent driving exercises trialled in this study. The high acceptance of the tasks by learners and ADIs should facilitate their introduction into the current training and testing regime. Changes may include longer training times with specific exercises in multi-tasking, and a transition from teaching to coaching in the later stages of the training process, to promote safe, responsible and independent decision making by the learner.

The magnitude of the performance decrement experienced in the 'following road signs' exercise was considerable, and subjective ratings in the current study are consistent with the hypothesis that this was due to workload associated with this exercise. It is likely that other 'real driving' tasks that introduce high workload and distraction among new drivers have similar detrimental effects on performance, and it is likely that the sudden addition of challenging (and unpractised) tasks plays a significant role with regards to the inflated accident liability of new drivers. Therefore, if GB's driver training can be evolved to make new drivers more competent at 'real driving' tasks, this could contribute to reductions in accident rates of novice drivers. The inclusion of independent driving tasks into driver training and testing should be seen as the first step in a longer term programme of addressing the mismatch between driving experience pre-test, and driving experience post-test.

Practical problems of implementation should be addressed through engagement with ADIs, and further research into the possible problems faced by minority groups such as learner drivers with disabilities. More data collection is required to ensure that future exercises do not unfairly disadvantage those learner drivers with language difficulties and learning disabilities.

Recommendations relating to situational judgement testing:

On the basis of the findings on the situational judgement exercises, we recommend that these are not included as formal assessment components in the British practical driving test. In agreement with Helman (2008), we suggest that formal situational judgement testing belongs in the theory-testing element of the testing protocol, where standardisation of questions and answers is possible. However, the use of situational judgement exercises in driver training to develop hazard perception skills in the vehicle may have value. Situational judgement testing should not be regarded as a replacement for the video-based hazard perception testing used in the theory

test, experience of which is known to reduce accident risk (e.g. Wells et al, 2008), but as a possible extension to existing procedures.

1   Introduction

1.1   Background

The core aim of the Driving Standards Agency (DSA) is to help deliver improvements in road safety by influencing driver behaviour through setting the standard for safe drivers and trainers, educating drivers, supervising trainers and assessing the standard of driving at test. The DSA seeks to work in close partnership with public and private stakeholders in order to develop its role in delivering higher driving standards in GB. These goals are reflected in the DSA's vision "Safe Driving for Life" and its mission is to contribute to the Government's 2010 Road Casualty Reduction Targets set out in 2000.

The 2008 DSA consultation document ('Learning to drive: a consultation paper') sets out a number of proposed changes to driver testing and training in GB, focused specifically on reducing the accident risk encountered by young, inexperienced drivers. Research suggests that learner drivers believe that 'real driving' is fundamentally different from the driving required to pass the test and that some drivers experience the loss of their instructor as a negative event (Christmas, 2007). Recent international research in road safety has established that driver training should not only focus on vehicle control skills but should also address higher cognitive skills such as hazard perception and understanding of hazardous road situations (Hatakka et al., 2002). This research has led to changes in training and testing regimes of several countries, for example to the introduction of multi-phasic driver training in Austria or Norway or to changes of the practical driving test in the Netherlands. The revised Dutch driving test includes elements of 'situational awareness' as well as independent driving.

Based on international good practice examples as well as on research with learner drivers in the UK, the DSA has considered the introduction of independent driving exercises and situational judgement testing into the practical driving test and driver training.

Independent driving refers to the ability of drivers to make driving-related decisions independently. The current learning-to-drive protocol in GB requires learner drivers to always be accompanied by an experienced and qualified driver. Having passed their practical driving test newly qualified drivers are immediately entitled to drive unaccompanied. Research, however shows that the learning process and acquisition of driving experience continues long after passing the practical test and that the gradual increase in experience is accompanied by substantial reductions in accident liability during the first six months of driving (Maycock, 2002; Mayhew, Simpson & Pak, 2003; Williams, 1999).

Situational judgement assessment in driving is a test of a person's cognitive insight through asking questions regarding specific driving situations. Such insight may impact upon decision-making and behaviour in specific driving situations.

Currently, there is no mandatory requirement for driving instructors to include elements of situational judgement assessment or independent driving in their training protocol for learner drivers, and the driving test does not include these elements.

The Driving Standards Agency (DSA) has commissioned TRL to explore the practical feasibility of introducing these two new elements into the GB training and assessment protocol. The current study follows on from two literature reviews (Hutchins, 2008; Helman, 2008) commissioned by DSA, which assessed the *theoretical* suitability of the two elements for introduction into the GB training and assessment protocol for learner drivers. These reviews concluded that some form of situational judgement testing and some form of independent driving assessment are suitable for inclusion, and are likely to have benefits for new drivers.

In the current study, the *practical* feasibility of including these two elements in the practical driving test is assessed. The study specifically aims to explore:

- How the inclusion of these new elements would impact learners' performance;

- Learner drivers', ADIs' and DSA examiners' acceptance of the new elements and their perceptions of their relevance for later solo driving;

- Learner drivers, ADIs' and DSA examiners' views on the benefits of the inclusion of the new elements into driver testing (and training);

- Learner drivers, ADIs' and DSA examiners' views on the disadvantages and barriers to the inclusion of the new elements into driver testing (and training).

Findings from the study will allow further steps towards the inclusion of new elements into GB's training and testing protocol to be based on a comprehensive assessment of their impact on and acceptance by learner drivers, ADIs and DSA examiners.

1.2   Independent driving

Independent driving refers to drivers' ability to independently make driving-related decisions regarding all aspects of the driving task and in particular those relating to navigation decisions and to dealing with road hazards. It can be seen as relating to level 2 (mastery of traffic situations or 'manoeuvring') and level 3 (trip-related context and considerations, or 'navigating') of the GDE matrix (Hatakka, Keskinen, Glad, Gregerson, and Hernetkoski, 2002, see Appendix A).

In a review of the literature relating to the feasibility of introducing independent driving to the GB training and assessment protocol, Hutchins (2008) reported that novice drivers, after passing their test, suddenly find themselves without the support of an experienced and qualified driver and have to face a plethora of new challenges. These include navigation to destinations without instruction, deciding how to deal with hazards in the road environment and coping with situations that perhaps were not experienced in their driving lessons (e.g. driving in the dark, driving with same age passengers). At the same time, newly qualified drivers may not have anyone in the car who could answer any driving-related questions that may arise.

Research suggests that learner drivers believe that "real driving" is fundamentally different from the driving required to pass the test and that some drivers experience the loss of their instructor as a negative event (Christmas, 2007). The sudden absence of supervision at post-test stage may lead to driving errors that result in near misses or accidents. It can also result in the novice drivers' adoption of a driving style to express personal goals and characteristics which may be incompatible with safe driving. Again this has implications for accident rates (Hutchins, 2008).

Hutchins (2008) concluded that increased emphasis on independent driving in driver training should help address some of these challenges and suggested that including elements of independent driving in the practical test would ensure that such abilities are tested. Through independent driving examiners could also observe more 'typical' driving behaviour, and thereby reach a more robust assessment of competence.

Hutchins (2008) found that while several countries incorporate independent driving into their practical testing to some degree (e.g. Western Australia, Spain, France, Sweden and Austria), only the new Dutch practical driving test dedicates a significant proportion of time to the specific assessment of independent driving skills. Pilot studies of the new Dutch test have produced encouraging results; on the basis of a practical driving test and instructor-, candidate- and examiner-evaluation forms, independent driving was reported to be of *"…great value for the driving test as well as for the training of novice drivers…"* (Vissers et al., 2007, p10).

In the current study, the independent driving exercises trialled were:

1. **Following verbal directions**: Learners were given a short number of directions to follow as if from someone they had stopped and asked. They then followed these directions from memory while driving.

2. **Turn the vehicle in the road**: Learners were asked to imagine that they realised they were going the wrong way, and to turn the car around in the road using a method of their choice.

3. **Following road signs**: Learners were asked to follow road signs to a local town for a period of time.

1.3   Situational Judgement

Situational judgement assessment involves testing peoples' knowledge and behavioural tendencies in a particular situation, within a given domain. Situational judgement tests have been used extensively in employment selection, and have been shown to have some advantages over traditional selection techniques such as tests of intelligence, and personality tests. These advantages include better prediction of job success, and the fact that they seem to be fairer to minority sub-groups than are standard tests of intelligence.

An example of a situational judgement question is given below (in this case the job-related domain is 'office work'—taken from McDaniel and Whetzel, 2005):

Everyone in your work group has received a new computer except you. What would you do?

1. *Assume it was a mistake and speak to your supervisor.*
2. *Confront your supervisor regarding why you are being treated unfairly.*
3. *Take a new computer from a co-worker's desk.*
4. *Complain to human resources.*
5. *Quit.*

Currently the GB driving theory test (multiple-choice component) contains some elements of situational judgement testing (for example, candidates may be asked to choose appropriate behaviours for dealing with a slow moving driver in front) but there is also interest in exploring the suitability of some kind of situational judgement testing in practical driver training and assessment.

Helman (2008) reviewed evidence from applied and academic research into situational judgement testing, and evidence from the implementation of situational judgement testing in the driver training and assessment protocols of other countries. Helman (2008) defined situational judgement in driving as:

"…the application of driving-related knowledge and behavioural tendencies (e.g. personality, attitudes, beliefs etc.) to the assessment of traffic situations, including knowledge of the appropriate driving behaviours in those situations."

Helman (2008) concluded that although formal situational judgement testing in driving was probably only feasible in the context of driving theory testing (a context in which close control of the design and administration of materials is possible), testing at a reduced level of complexity could also be used in practical driver training and assessment to permit some insight into drivers' decision-making processes regarding pertinent driving situations. Importantly, Helman concluded that situational judgement testing is suitable for the measurement of higher order skills required for driving, such as possession of the appropriate attitudes and opinions regarding driving, and general 'citizenship skills' and safe behavioural tendencies. Such higher-order skills have been identified as extremely important for the continued reduction of road accidents in novice drivers, for example in the CIECA Goals for Driver Education (GDE) matrix (Hatakka, Keskinen, Gregersen, Glad and Hernetkoski, 2002—see Appendix A).

In the current study, the situational judgement exercises trialled were:

1. **Situational judgement questions after a situation**: Learners were asked to describe the hazards and risks they had considered when negotiating a roundabout, after they had stopped on the side of the road having negotiated the roundabout.

2. **Situation judgement questions before a situation**: When stopped at the side of the road before a bend in the residential road ahead (with many parked cars and side-entrances), learners were asked to list the risks and hazards they would consider before driving through the situation.

1.4 Research Objectives

Both Helman (2008) and Hutchins (2008) concluded that the practical implications of including the new elements into the driving test and driver training would need to be assessed if successful implementation was to be achieved. Therefore the current study's overall objective is to enable DSA to make informed, evidence-based decisions regarding the practicalities of implementing situational judgement testing and/or independent driving into the training and assessment protocol for learner drivers.

Specifically, the high-level research questions for the study are:

Research questions relating to the independent driving exercises

- What impact do the independent driving exercises have on the driving performance of learner drivers, under 'test like' conditions?

- How relevant to 'real driving' are the independent driving exercises seen to be?

- What are the perceived advantages and benefits of the independent driving exercises?

- What are the perceived difficulties and challenges associated with the independent driving exercises, including practical implications for training and examining?

- Which demographic and individual difference variables (including experience with the exercises, language skills, learning disabilities, and shyness) impact on performance and perception of the independent driving exercises?

Research questions relating to the situational judgement exercises

- Are learner drivers able to provide good quality responses to situational judgement questions under test-like conditions?

- How relevant to 'real driving' are the situational judgement exercises seen to be?

- What are the perceived advantages and benefits of the situational judgement exercises?

- What are the perceived difficulties and challenges associated with the situational judgement exercises, including practical implications for training and examining?

- Which demographic and individual difference variables (including experience with the exercises, language skills, learning disabilities, and shyness) impact on performance and perception of the situational judgement exercises?

The study aimed to answer these high-level research questions with a sample of learner drivers, Approved Driving Instructors (ADIs), and DSA examiners who took part in 'driving events' at DSA's training centre in Cardington from April–July, 2008. Quantitative and qualitative data were collected, including examiner ratings of driver

performance during the drives, and data from questionnaires and semi-structure interviews with examiners, ADIs, and learner drivers afterwards.

1.5   Structure of report

After this introduction, the remainder of the report is structured as follows:

- Section 2 describes the methodology in detail.

- Section 3 reports the main findings and analyses separately for the independent driving and situational judgement exercises.

- Section 4 then discusses the results and draws conclusions.

- Section 5 makes recommendations.

2   Method

2.1   Sample and recruitment

2.1.1   Learner Drivers

100 learner drivers were recruited for trial participation through ADIs from the British School of Motoring (BMA) and The Automobile Association (AA). The learners were approached by their ADI and provided with an information sheet describing the study (See Appendix B). Those who expressed an interest were given an appointment to take part in a 'driving event' (see Section 2.2.1) at their convenience, after signing a consent form (see Appendix C). For taking part in the study, learner drivers were able to claim a free driving test (either a new booking, or a refund on a previously-booked test). Learner drivers were eligible to take part in the study if they were considered 'test-ready' by their ADI, even if they had taken and failed previous tests. A sampling frame designed at the outset of the study called for a sample of 100 learner drivers, consisting of 50 males and 50 females. The sampling frame also required ten males and ten females to be learner drivers whose first language was not English, to check for problems specific to this demographic. Final achieved sample demographics are shown in Section 3.1.

2.1.2   ADIs

To brief ADIs on the study, two ADI briefing days were held at the DSA training centre, Cardington, Bedfordshire (on 28 February and 17 June 2008). A total of 15 ADIs took part. They were recruited through their driving schools (BSM, and AA). ADIs received payment from DSA for three hours of their time (to allow travelling to and from Cardington, and the time it took to take part in the driving event and the questionnaire and interview session afterwards). At the briefing days, the purpose of the study was explained to ADIs. Key points made to ADIs included the following:

- The purpose of the study was to understand the practical advantages and disadvantages of including the new elements in the test.

- Although the driving events would be run under test-like conditions, they were NOT a test.

- The individual tasks used in the driving events were described.

- The importance of the data to be collected (including fault data from during the drive, and data from questionnaires and interviews afterward) was explained—the scientific rigour of the data collection and analysis was explained as being crucial to the value of the feasibility study.

- ADIs were encouraged to consider putting forward candidates of all personality types for the study—for example shy candidates as well those who were confident—since it was important to see whether any specific 'type' of people found any elements of the driving event (see Section 2.2.1) especially difficult.

- It was explained that ADIs should try to allow their learner drivers to practise the tasks so that their experience of the tasks on the driving event was not completely novel[1]—however ADIs were urged not to practise the specific route used on the study (to prevent over-familiarity).

- The practicalities of booking learner drivers in for the driving event were explained.

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[1] Feedback from the learner drivers early in the study suggested that very few had been given specific experience, so this point was stressed more heavily at the second ADI briefing in June.

2.1.3   DSA examiners

The four DSA examiners were recruited internally from DSA's testing centre at Cardington to lead the driving events.

2.2   Procedure

2.2.1   DSA driving events and access to learner drivers

Data were collected from learner drivers during and immediately after the 'driving events' conducted by the DSA, at the DSA training centre in Cardington. The driving events took place from April–July 2008. During the driving events, learner drivers were accompanied by their ADI (in the front passenger seat) and a DSA examiner (in the rear seat behind the front passenger seat). The driving event consisted of a series of three independent driving tasks, and two situational judgement tasks, interspersed with 'normal' driving under the instruction of the DSA examiner, as during a normal driving test[2]. The order of 'normal' driving and independent driving / situational judgement tasks in the event, and their approximate times to complete are shown in Table 2.1 below. Section 3.2.1 provides details on how completion times were used to correct for exposure. A description of the route used for the driving event is included in Appendix D.

Table 2.1: Order and timing of sub-tasks in the driving event.

Task	Average completion time in minutes and seconds [3]
Independent driving 1—following a set of verbal directions	3:58
'Normal' driving continuing to stop at side of road past a roundabout[4]	5:05
Situational judgement 1—verbal assessment following a situation (roundabout)	N/A
Independent driving 2—turning car around in the road using method of learner's choice	2:23
Situational judgement 2—verbal assessment preceding a situation (bend in road ahead)	N/A
'Normal' driving continuing until…	1:52
Independent driving 3—following road signs (to Kempston) until switching to…	5:47
'Normal' driving returning to training centre	7:03
Average total time spent in 'normal' driving mode	**14:00**
Average total time spent in 'independent' driving mode	**12:08**

Learners carried out the driving event in their ADI's car. The ADI acted as supervising driver throughout the event, but was instructed by the examiner to 'hold back' on providing advice to the learner, unless required on road safety grounds. This was done to ensure that the independent driving tasks were as close as possible to being truly independent.

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[2] Great care was taken to ensure that learner drivers understood that the event did NOT constitute a test, or even a mock test. The only similarities with a test were that the method by which the examiner gave instruction during the 'normal' sections was the same as in a test (but from the back seat rather than the front), and the examiner recorded faults throughout the drive.
[3] These times are based on a random selection of 25 of the participant learner drivers.
[4] For some participants, this 'normal' driving section was interrupted by the situational judgement questions (depending on whether a place to stop was available).

The DSA examiner briefed learner drivers informally before the driving event, and ensured that all learner drivers had given written consent by completing the consent form. During the driving event, all in-car conversation was recorded using a digital recorder. Recording was paused by the DSA examiner at the end of the driving event, and then re-started when learner drivers began to complete the questionnaire and short interview (see Section 2.3.3) in a room at the DSA training centre. DSA examiners returned all questionnaires and digital recordings to TRL for transcription and analysis.

2.2.2 Procedure for interviewing ADIs and DSA examiners

Near the end of the study, all ADIs and DSA examiners were interviewed by telephone.

2.3 Data collection materials and methods

Sections 2.3.1 to 2.3.3 outline the measures and methods used to collect data from the learner drivers, ADIs, and DSA examiners.

2.3.1 DL25 forms

The standard DL25 fault recording sheet was adapted for use in the study (see Appendix E). For the first 42 learner drivers, the form was split into 'normal' and 'independent' driving sections, so that driving faults and serious faults[5] could be recorded separately for the 'normal' and 'independent' driving sections of the driving event. For the remaining 58 learner drivers, the form also split the three 'independent' tasks out so that faults could be attributed each individually.

2.3.2 Situational judgement questions

Participants' answers given during the situational judgement questions were transcribed from recordings made in the car during the driving event. They were subsequently rated by the DSA examiners for quality. The actual questions asked during the two situational judgement scenarios are shown in Appendix F.

2.3.3 Questionnaires and interviews with learner drivers, ADIs and DSA examiners

Questionnaires were administered to learner drivers immediately after the driving event. They were administered by the DSA examiners, who had been trained at the beginning of the study by the TRL researchers, to ensure objectivity. To assist in response rates and quality of data collected, the DSA examiners read the questionnaires to the learner drivers, and filled in the answers on their behalf. The DSA examiners also administered short 'interviews' using set questions throughout the learner drivers' completion of the questionnaire. These interviews were designed to complement the questionnaires by providing more in-depth information that expanded on the questionnaire answers and provided some qualitative data. The questionnaire/interview schedules used for learner drivers can be seen in Appendix G.

ADIs completed a similar questionnaire which was posted to them after their telephone interview (see Appendix H). ADIs were also interviewed over the telephone by TRL staff (see Appendix I for interview schedule). DSA examiners completed an in-depth interview (see schedule in Appendix J).

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[5] We refer to driving faults and serious faults as 'minor' and 'major' errors respectively throughout the remainder of this report.

The questionnaires and interviews resulted in the collection of several types of data, which are outlined below in Sections 2.3.3.1 to 2.3.3.3.

2.3.3.1 Personality and demographic data

The demographic and background details collected included variables such as age, gender, amount of previous training, and personality data. The personality questions were from the Ten Item Personality Measure (TIPI) which measures the Big Five measures of personality (Extroversion, Agreeableness, Conscientiousness, Emotional Stability and Openness to Experience; Gosling et al., 2003). A full list of variables can be seen in the questionnaires in Appendices G and H.

2.3.3.2 Quantitative ratings of driving event tasks

Learner drivers and ADIs gave subjective agreement ratings (on five-point Likert-type scales, where 1=strongly disagree and 5=strongly agree) to a number of statements regarding the independent driving and situational judgement elements. These statements related to how relevant the elements were to 'real driving', and also to subjective feelings of how much effort or 'workload' the five tasks represented to the learner drivers[6]. The workload statements were derived from four of the scales on the NASA TXL subjective workload scale (Hart and Staveland, 1988), a widely-used and validated subjective workload assessment tool. The four scales to which statements related are: mental demand; temporal demand; effort; and frustration.

2.3.3.3 Qualitative responses to questions regarding the driving event tasks

A structured interview format was used with learner drivers. The interviews were conducted by the DSA examiners. Learner drivers were asked a series of open-ended questions relating to each of the independent driving exercises and the situational judgement exercises. Learner drivers were asked questions regarding the suitability of the exercises for the future driving test, relevance of the exercise to real driving and what aspects they liked and disliked about the exercises.

In-depth and semi-structured interviews were conducted on ADIs and DSA examiners by TRL researchers. The interview guide included questions on relevance of the exercises to real driving, benefits to learner drivers and anticipated problems if the exercises were incorporated in into the existing test. Further questions were asked regarding the practical implications for training and assessment.

2.4 Brief description of analyses

2.4.1 Quantitative analyses

Quantitative variables were subjected to relevant inferential statistical tests, including testing for differences between means and testing for correlations. The precise analyses used are described under each relevant sub-section of the Results section.

2.4.2 Qualitative analyses

The recordings of the qualitative interviews with the learner drivers, ADIs and examiners were transcribed and analysed using Content Analysis (e.g. Neuendorff, 2002). Qualitative content analysis involves a process to condense raw data into

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[6] The workload ratings were not used in the analysis for the situational judgement tasks, since 'answering questions under no time pressure' was not regarded as the kind of dynamic task in which workload assessments can prove illuminating in terms of understanding underlying cognitive processing.

categories and themes based on inference and interpretation. Following good practice guidelines to ensure that qualitative data are explored exhaustively, the two researchers who coded the data compared themes and sub-themes on a regular basis to ensure that any new themes emerging from the data were captured.

3   Results and discussion

In this section, we first present a description of the samples of participants used in the study. Subsequently high-level and specific research questions are presented, first, for independent driving, and second, for situational judgement. For each high-level research question findings are presented and conclusions are drawn.

3.1   Description of samples

3.1.1   Learner drivers

The general characteristics of the sample of learner drivers are shown in Table 3.1. Their amount of formal and informal practice is shown in Table 3.2. One key characteristic for the requirement for the current study is that the participants were 'test ready' (in that they could be expected to pass the practical driving test). The 'Cohort II' study (Wells, Tong, Sexton, Grayson and Jones, 2008) showed that the average number of hours of formal tuition taken by learner drivers before they pass their practical test is 47. We can therefore conclude that our sample is representative of 'test-ready' candidates in GB, if formal tuition is used as a benchmark, since our sample averaged 45.15 hours of formal tuition—very close to the level shown in Wells et al. (2008)[7].

Table 3.1: Learner drivers—characteristics.

Gender	Male	41
	Female	58
Age		Mean 21.45 years
		Stdev 5.9 years
		Range 36 years
1st Language English or Welsh	Yes	95
	No	4
Confidence in speaking English (only the four participants who did not list English or Welsh as first language)		4.25[8]
		Stdev 0.5
		Range 1
Ethnic background	White	81
	Others	18
Disability	Yes	3
	No	95
	Don't know	1

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[7] The Cohort II study also showed that passers averaged 20 hours of informal tuition with friends and family, and on average took 13 months to learn to drive. Our sample falls short of these figures, with an average of only 7.62 hours of informal practice, and 8.88 months of learning time overall. However, these variables were not found to be predictive of passing the practical test in Cohort II, since learners who had failed their test averaged almost the same number of hours' informal tuition as those who passed, and had more months' learning.

[8] The scale was out of 5, where a response of 5 is 'extremely confident'.

Table 3.2: Learner drivers—history of learning to drive.

Number of hours of formal lessons	Mean 45.15
	Sdtev 28.47
	Range 196
Number of hours of practice with family and friends	Mean 7.62
	Stdev 17.77
	Range 150
Number of months learning	Mean 8.88
	Stdev 6.67
	Range 35

3.1.2 ADIs and DSA examiners

Only nine of the 24 ADIs who completed the trial completed the questionnaire. The others failed to return their questionnaires, despite reminders being sent. The range of experience as an ADI varied from one and a half years to three years. ADIs in this sample taught between 12 and 22 candidates per week, with the majority of ADIs teaching 15 candidates per week.

Four DSA examiners conducted the trial at the training centre in Cardington. We interviewed three of these DSA examiners towards the end of the trial.

3.2 Independent driving results

3.2.1 What impact do the independent driving exercises have on the driving performance of learner drivers, under 'test like' conditions?

Understanding the effect of the independent driving exercises on test-ready learner drivers who have gone through the current GB training protocol will elucidate the required changes to the existing training of learner drivers if such exercises are to be introduced into the GB practical driving test.

The effect of the new exercises on driving performance is assessed by examination of two key measures: the rate of errors made during the different exercises (the three independent driving exercises compared to each other and to 'normal driving' conditions); and the participants' ratings of workload (for the three independent driving exercises compared to each other).

Summary of findings

What impact do the independent driving exercises have on the driving performance of learner drivers, under 'test like' conditions?

- Learner drivers committed five times as many major errors ('serious faults' as scored on the DL25 forms) per minute of exposure during the 'following road signs' exercise as they did during 'normal driving'. This difference remained, even when only those 28 drivers who would have passed a GB driving test based on their 'normal' driving performance were included in the sample.

- Error rates in the other two independent driving exercises were almost the same as during normal driving, apart from the task of 'following verbal directions', where learners made fewer major errors, but more minor errors.

- The subjective ratings of workload back up the error analyses. Ratings for 'following road signs' were highest, showing that learners found this task the most effortful, mentally demanding, and frustrating.

- The findings have considerable practical implications: we examined how many drivers who would have passed their driving test based on their 'normal' driving performance would then fail based on major errors made in one of the independent driving exercises. This analysis showed that of the 28 'passers', the numbers who went on to commit at least one major error in the 'following road signs', 'following verbal directions', and 'turn vehicle in the road' exercises were 16, 2 and 4 respectively.

- When these numbers are related to the pass-rates in GB's practical driving test, they suggest that the current pass-rate would drop from 42% to 18% if the 'following road signs' exercise were introduced without any changes to training, and to 39% and 36% with the similar introduction of the 'follow verbal directions' and 'turn the car in the road' exercises. The introduction of all three exercises without changes to the content of current driver training would lead to a pass-rate of 13% for the driving test. Note that this analysis is based solely on the committing of additional major errors (not minor errors), and thus probably slightly underestimates the effect of introducing the exercises on pass-rates.

- Taken as a whole, the error and workload findings are compatible with the notion that 'test-ready' learner drivers in GB currently struggle with 'real driving' tasks that introduce high workload or distract attention from the basic controls of the car.

- There are some limitations of the current study that restrict the degree to which the performance findings can be generalised. Firstly the independent driving exercises are confounded with road section, meaning that performance differences may have been due to road section rather than task difficulty. Secondly there are insufficient data from minority groups to ascertain how the new exercises would impact specifically on the performance of these groups.

3.2.1.1   How did error rates compare between the independent driving exercises and normal driving modes?

The numbers of errors made by each learner driver ('minor' and 'major' faults on the DL25 form) under normal driving and under the three different independent driving exercises[9] were calculated.

The 'normal' and independent driving exercises differed in length and were thus not directly comparable. To correct for this, the number of errors in each exercise was divided by the average number of minutes taken to complete the exercise (shown in Table 2.1). The resulting measure, 'error rate', is expressed as the number of minor or major errors per minute of exposure, and is used for all the error analyses presented.

Figure 3.1 shows the mean major error rates for 'normal' driving and for the three independent driving exercises. The data show that the major error rate in the 'following road signs' exercise is approximately five times that of normal driving, while the other error rates are comparable. Error scores were not normally distributed, because of the low numbers of errors overall and the presence of a large number of zero error scores. Therefore to test for the significance of the differences observed, a non-parametric Friedman's test was used, with 'driving type' as the independent variable, and mean ranking of error rate as the dependent variable. Non-parametric statistical tests (unlike more powerful parametric tests) do not make any assumptions regarding the distribution of scores, and therefore can be used on data like those presented here[10].
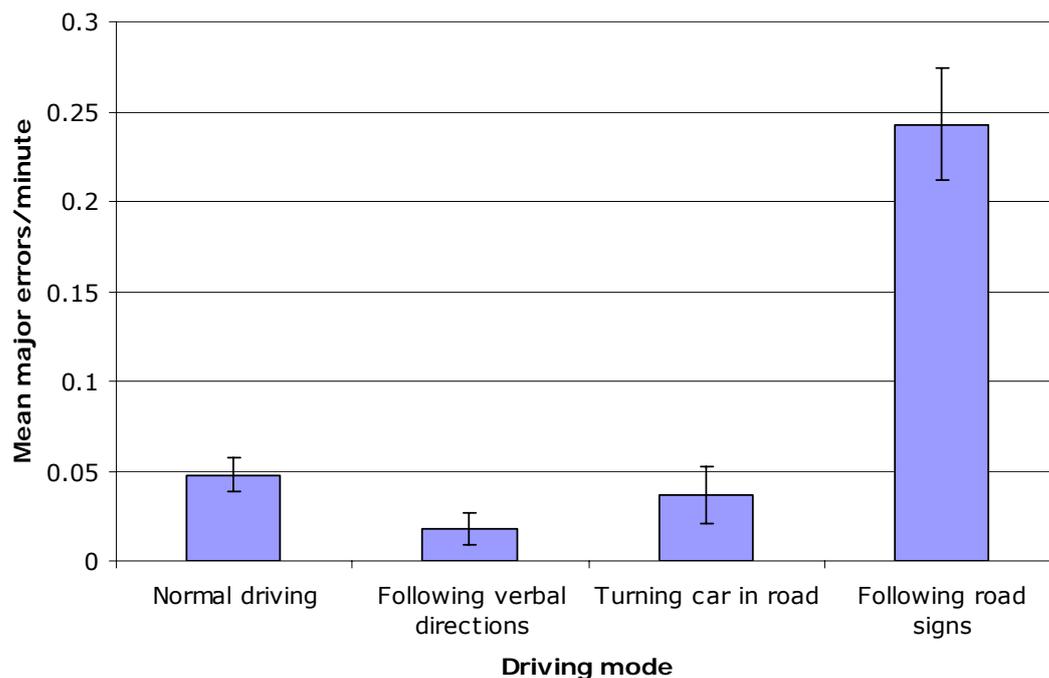
Figure 3.1: Mean major error rate by driving mode.

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[9] This separation of the independent driving exercises for error analyses was only possible for 57 of the participants, since the errors were not collected separately for the three independent driving exercises until part-way through the study. However 57 participants provide sufficient experimental power for this analysis—at least 80% power for all comparisons involving minor error rates, and over 95% power for the key analysis on major error rates ('following road signs' versus other conditions).

[10] Note that non-parametric tests do not use the mean scores to test the hypotheses, but instead use 'ranks' of scores. However we present the mean error rates, ratings and other dependent measures in tables and figures throughout this report, as they are more meaningful and are easier to interpret for the reader. Tables of ranks used for the non-parametric tests are available on request from the first author, if required.

The Friedman's test revealed that the major error rate differed significantly between the four driving modes (Chi-Square = 61.0, df = 3)[11]. Further analyses using Wilcoxon signed-ranks tests on each of the six two-way comparisons revealed that the mean major error rate in the 'following road signs' exercise was significantly greater than in the 'following verbal directions' and 'turning car in road' exercises, or under 'normal' driving. Error rates in the other three modes did not differ, except that the error rate in the 'following verbal directions' exercise was significantly lower than in normal driving.

The result of a lower major error rate in the 'following verbal directions' exercise seems counter-intuitive in isolation since it implies that by introducing additional things for the driver to think about, the driving task itself was made easier. However the minor error rate was significantly higher in this exercise (see Figure 3.2 and analysis below), suggesting that overall the exercise did also have some deleterious effects on performance if all errors are considered. Additionally, it could be argued that the section of the route devoted to the 'following verbal directions' exercise was noticeably easier than other sections, due to the large stretches of rural roads, with little chance for interaction with other traffic. It is possible that the 'following verbal directions' exercise would have shown a similar increase in major error rate relative to normal driving had it been carried out (as was the 'following road signs' exercise) on roads similar to those used for the rest of the driving event (mostly urban 'B' and 'A' roads with heavier traffic and more features such as turns, roundabouts, and multiple lanes). This point may also apply to the 'turn the vehicle in the road' exercise, and is returned to in the discussion below, and in Section 4. Another explanation for the decreased rate of major errors in this task is its similarity to the normal driving mode, in that learner drivers can rely on the content of the instructions given by the examiner as 'cues' for action. For example, when told to "turn left at the end of this road, then turn right at the end of the next road", a learner driver is effectively relying on the same information that would otherwise be given to them at the respective decision points—it may thus not truly be independent driving. Additionally (from a cognitive psychology perspective) it may not involve true 'multi-tasking' in the same way that the 'following road signs' task does, since it does not involve overlap in the mental resources required for two tasks occurring concurrently (see e.g. Wickens, 1984).

The lack of any increase in major or minor errors in the 'turn in the road' exercise may be accounted for by the fact that it is entirely self-paced, and again there is no reason to assume that it introduces resource allocation problems.

Figure 3.2 shows the mean minor error rates for 'normal' driving and for the three independent driving exercises. The data show that the minor error rate in the 'follow road signs' and 'follow verbal directions' exercises are approximately 100% higher, and 66% higher than in normal driving, respectively.

The Friedman's test revealed that the minor error rate differed significantly between the four driving modes (Chi-Square = 14.2, df = 3). Further analyses using Wilcoxon signed-ranks tests on each of the six two-way comparisons revealed that the minor error rate was significantly higher in the 'following road signs' and 'following verbal directions' exercises than in normal driving, and in the 'turning car in road' exercise. No other comparisons were significant.

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[11] Interestingly, parametric repeated-measures ANOVAs run on the error data showed exactly the same pattern of non-significant and significant results.
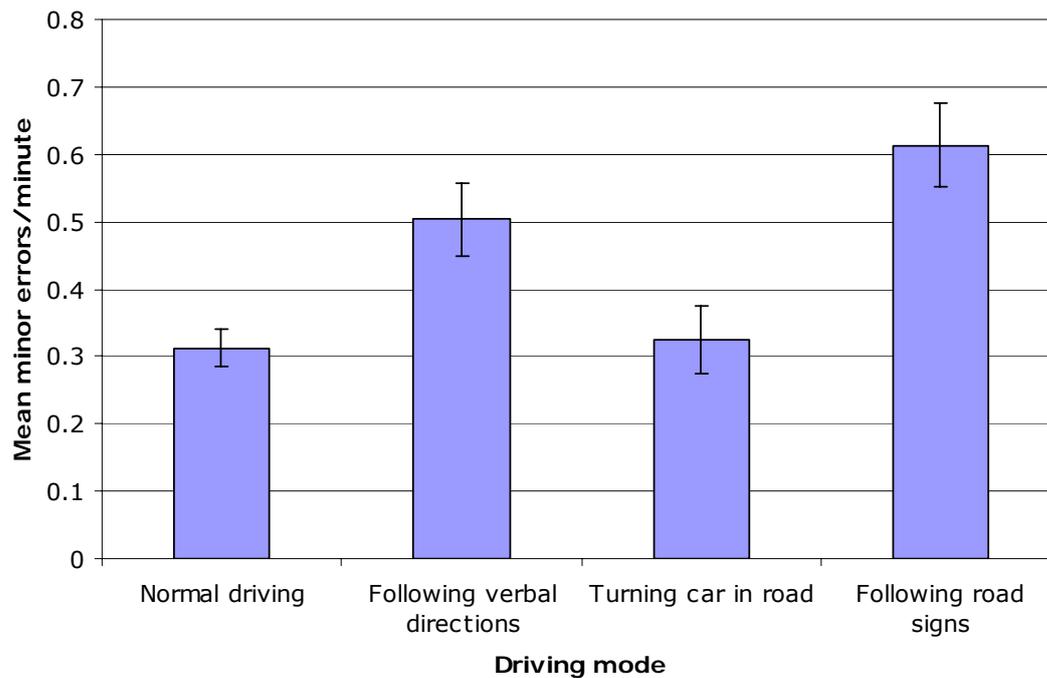
Figure 3.2: Mean minor error rate by driving mode.

The error rates show significant differences between some of the independent driving exercises and 'normal' driving. Specifically, the 'following road signs' exercise stands out as one which proved particularly difficult for learner drivers to complete without increases in both minor and major errors. The magnitude of the difference in major error rates between the 'following road signs' and normal driving is considerable. To examine this difference in more detail, another three analyses were carried out on the major error rates.

The first analysis compared error rates between driving modes for a subset of participants, who would have passed their driving test based on their performance in the 'normal' driving condition. The aim of the analysis was to check whether the 'following road signs' exercise is difficult for all drivers, or only for those drivers who would already have failed the driving test anyway. Thus, it excluded participants who would have made at least one major error, and/or fifteen or greater minor errors during the 'normal' driving mode of the driving event if the time spent in this mode had been the same as the length of a normal GB driving test. Since the legal minimum length of a standard GB driving test ('on-road' time) is 30 minutes, participants were excluded from the analysis if they made any major errors during normal driving, or had a minor error rate of greater than 0.5 per minute (as this would result in greater than 15—the failure criterion in the GB test—during a 30 minute drive). These criteria resulted in 28 (49%) of the 57 participants available for analysis being counted as 'passing', which is actually slightly higher than (but not radically different from) the current GB test pass-rate of around 42% (Wells et al., 2008). Exactly the same pattern of results was found as in the full analysis, with the exception that the difference in major error rate between the 'following road signs' and 'turn the vehicle' task became only marginally significant ($p=0.066$ in the non-parametric test). Numerically, the major fault rate for the 'following road signs' exercise was still three times that for the 'turn vehicle in road' exercise, and nearly ten times that of the 'following verbal directions' exercise (major fault rates of 0.173, 0.06 and 0.018 for 'following road signs', 'turn vehicle in road' and 'following verbal directions' respectively). The drop in experimental power (to only 64% for detecting the difference between the rates for 'following road signs' and 'turn vehicle in road') resulting from the lower participant numbers in this analysis can probably account for the marginal significance of that comparison.

Secondly, analysis were conducted to identify how many people, who would have passed their test based on their performance under normal driving, would have failed due to making a major error on one of the independent driving exercises. This question is important on practical grounds; making the assumption that the learner drivers in this study are a good representation of 'test-ready' candidates across GB, the answer to this question tells us what would happen to pass-rates (just due to major errors) across GB if the independent driving exercises trialled were introduced into the GB driving test with no other changes to the training and testing protocols. Table 3.3 shows these data.

Table 3.3: Count (and percentage) of candidates who would have passed their test based on their 'normal driving' performance, but would have failed based on making major errors in one of the independent driving exercises.

	All exercises	'Following verbal directions'	'Turn car in road'	'Following road signs'
Count of fails from candidates who would otherwise have passed (percent)	19 (68%)	2 (7%)	4 (14%)	16 (57%)
New GB pass rate if exercise introduced with no changes to protocol (assuming current rate is 42%)	13.44%	39.06%	36.12%	18.06%

Based on this analysis, we can state that if these exercises were introduced into the GB practical driving test without changes being made to the training and testing protocols (see Section 4 for suggestions on how to approach this), the pass rate for the GB practical driving test is likely to drop. Introduction of the 'following road signs' exercise alone would cause the pass rate to plummet to 18.06%. The data show that GB learner drivers who would otherwise have passed their test based on their 'normal' driving under test-like conditions have considerable difficulty in carrying out independent driving exercises. This is especially true of the 'following road signs' exercise.

Thirdly, we counted the different types of major errors being made by candidates in normal driving and the three independent driving exercises to explore if the types of errors being made under the different exercises would tell us something about the underlying causes for the increase in errors. Specifically, it would tell us whether the much higher rate of errors in the 'following road signs' exercise was likely to be due to increased workload and distraction involved in this task. Table 3.4 shows these data.

Table 3.4: Major error rates (faults per minute of exposure) for different error types made during normal driving and during the three different independent driving exercises. Error rates that show an increase compared to the normal driving condition are marked with a '*'.

	Normal driving	Following verbal directions	Turn the vehicle	Following road signs
Control: gears	0.07	0.25*		
Control: steering	0.14		0.42*	0.35*
Move off: safely	0.07			
Move off: control				0.17*
Use of mirrors: signalling	0.07			
Use of mirrors: change direction	0.14	0.25*		4.33*
Use of mirrors: change speed				0.17*
Signals: necessary				1.04*
Signals: correctly				0.17*
Signals: timed				0.17*
Response to signs/signals: traffic signs		0.25*		
Response to signs/signals: other road users				0.35*
Use of speed	0.36	0.25		0.69*
Following distance	0.21			
Progress: undue hesitation				0.35*
Junctions: approach speed	0.14			0.52*
Junctions: observation	0.36	0.50*		1.21*
Junctions: turning right				1.90*
Junctions: left	0.07			
Positioning: normal driving	0.43			1.73*
Pedestrian crossing	0.07		0.42*	
Position/normal stops	0.14			0.35*
Observations			0.84*	
'Illegal'[12]			0.42*	

There is no evidence that the increased number of major errors in the 'following road signs' exercise was simply an artefact of the way in which the DL25 forms were used in the specific exercise. One example of this might be a speed violation occurring simply because the instructions for the exercise were given at a location where there was a change in speed limit. Although rates of two fault rates increased very obviously over normal driving ('use of mirrors: change of direction', and 'junctions: turning right'), there were also increases in the rate of all other types over normal driving. Overall the pattern of errors made in the 'following road signs' exercise is compatible with the hypothesis that the increased distraction and/or increased workload caused by the exercise led to deterioration in driving performance. Speculatively, we could conclude that: the workload imposed by the exercise exceeds the capacity that learners have available to devote to the other

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[12] Note that this is not a formal category on the DL25, but was a note made by hand by the DSA examiner for this one candidate.

things they need to remember when driving the car safely, and so leads to an increase in errors of all types; and the distracting effect of having to look outside the vehicle for signs leads to a further jump specifically in the number of errors involving a failure to use mirrors when changing direction. This explanation is compatible with a wide range of evidence in the literature suggesting that distraction and high workload introduced by various activities when driving can lead to decrements in driving performance (e.g. Kass, Cole and Stanny, 2007; Lee, Lee and Boyle, 2007; Klauer, Dingus, Neale, Sudweeks, and Ramsey, 2006; Burns, Parkes, Burton, Smith and Burch, 2002; McKenna and Farrand, 1999). Note however that further experimental work focused on the psychological mechanisms at play would be necessary to establish workload and/or distraction as the underlying cause(s) of the observed performance decrements.

That the other independent driving exercises did not lead to similarly large increases in major and minor error rates may be explained by some key differences in their task requirements. The 'turn in the road' exercise is a truly self-paced task where task difficulty may be reduced by adopting lower speeds and a serial rather than parallel processing of stages. The 'following verbal directions' exercise also does not require true multi-tasking, and may be described as very similar to the 'normal' driving mode since it enables learner drivers to rely on instructions provided by the DSA examiners and thus does not truly test independent driving.

There are some limitations of the current study that restrict the degree to which the performance findings can be generalised. Firstly the independent driving exercises are confounded with road section, meaning that performance differences may have been a result of the different road sections rather than task difficulty. Secondly there are insufficient data from minority groups to ascertain how the new exercises would impact specifically on the performance of these groups.

3.2.1.2 How did perceived workload differ between the three independent driving exercises?

The average ratings of workload given by learner drivers to the three independent driving exercises were calculated and compared. Since four different workload ratings were given for each exercise (corresponding to the NASA TLX scales of 'mental demand', 'temporal demand', 'effort' and 'frustration'), four separate analyses were run. Table 3.5 shows the mean workload ratings for the three exercises.

Table 3.5: Mean workload ratings for the three independent driving exercises.

	Follow a series of verbal directions	Turn the vehicle	Follow road signs
	Mean (SD)	Mean (SD)	Mean (SD)
The exercise was difficult (effort)	2.68	2.76	3.16
	(0.93)	(1.05)	(1.13)
The exercise was hurried or rushed (temporal demand)	1.98	2.07	1.94
	(0.75)	(0.82)	(0.74)
The exercise was mentally demanding (mental demand)	2.96	2.77	3.30
	(0.98)	(1.05)	(1.20)
The exercise was frustrating (frustration)	2.12	2.23	2.40
	(0.91)	(0.97)	(1.12)

In all cases except the 'temporal demand' scale, the data show that the highest ratings were given to the 'following direction signs' exercise. Since the data were not normally distributed, non-parametric Friedman's tests were used to test for the statistical significance of the differences observed. 'Exercise' was used as the independent variable, and mean ranking of workload as the dependent variable. The analysis for 'effort' showed that the ratings differed significantly between three exercises (Chi Square=17.805, df =2). Further analyses using Wilcoxon signed-ranks tests on each of the three two-way comparisons revealed that ratings were significantly higher in the 'following road signs' exercise than in the other two (Z=≤-3.240[13], p≤0.001), which did not differ.

The analysis for 'temporal demand' revealed no significant differences in ratings between the three exercises (Chi Square=2.849, df =2).

The analysis for 'mental demand' revealed that the ratings differed significantly between the three exercises (Chi Square=21.932, df =2). Further analyses using Wilcoxon signed-ranks tests on each of the three two-way comparisons revealed that ratings were significantly higher in the 'following road signs' exercise than in the other two (Z≤-2.988, p≤0.003), which did not differ.

The analysis for 'frustration' revealed that the ratings differed significantly between the three exercises (Chi Square=7.464, df =2). Further analyses using Wilcoxon signed-ranks tests on each of the three two-way comparisons revealed that ratings were significantly higher in the 'following road signs' exercise than in the 'following verbal directions' exercise (Z=-2.938, p<0.001). The difference in ratings for 'following road signs' and 'turn vehicle in the road' approached significance (Z=-1.655, p=0.098). The difference between ratings in the 'following verbal directions' and 'turn vehicle in the road' was non-significant.

Overall the analysis of the subjective workload supports the findings on errors. In short, the 'following road signs' task was perceived to be more mentally demanding, more frustrating, and requiring more effort than the other two exercises. These data help to describe why drivers also made far more major errors in this exercise[14].

3.2.1.3   A theoretical aside—is the 'following road signs' exercise a special case?

Given that the major error rate in the 'following road signs' exercise was so high, one might ask whether it is in some way a 'special case' that leads to errors as a result of a peculiar mismatch with the way that major errors are currently scored on the DL25 forms.

We do not believe that there is any evidence that this is the case, and that theoretically it is more likely that distraction and high workload are the causal factors in the increased error rates. In Section 3.2.1.1 it was shown that although there are some error types that show a very large jump in rates in the exercise, all error types that were apparent actually show an increase from the rates in 'normal' driving. Additionally, differences in task requirements between the independent driving tasks may have resulted in them being less demanding (see Section 3.2.1.1).

Given the problems learner drivers had with the following road signs exercise, it is worth considering what other 'real driving' tasks (for example, using navigation equipment) may result in similar increased workload and distraction effects, so that training can be developed to equip learner drivers to deal with these effects. Such training may not only be practical in nature, but may be based on increasing learner drivers' awareness of such issues in classroom teaching or discussion-based modules.

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[13] Note that in all cases the 'less than or equal to' sign refers to the magnitude of Z-scores ignoring the sign—signs are negative only as a result of the order in which rankings were carried out in SPSS and are not diagnostic to the magnitude of the difference between two scores.

[14] Spearman non-parametric correlations were calculated on workload ratings and major error rates in the 'following road signs task'. This analysis showed that the 'effort' rating was significantly correlated with major error rate (r=0.280, p=0.035), although the other scales were not.

3.2.2 How relevant to 'real driving' are the independent driving exercises seen to be?

One important aspect of any new exercises added to the driving test in the future will be the acceptance of the exercises by learner drivers as relevant to their later solo driving after passing their test. In this section, we discuss findings related to the relevance of the independent driving exercises to 'real driving'.

> ## *Summary of findings*
>
> ### *How relevant to 'real driving' are the independent driving exercises seen to be?*
>
> - Learner drivers, ADIs and DSA examiners perceived the independent driving exercises as relevant to 'real driving' as they prepare learner drivers for the challenges of solo driving. Following verbal directions and following direction signs were considered useful as they encouraged candidates to plan their route, be aware of the road conditions and make independent decisions. The task of 'turn the vehicle around' was considered relevant to real driving as it allowed candidates to make decisions regarding the appropriateness of the manoeuvre and where to conduct the manoeuvre.

3.2.2.1 How do learner driver ratings of relevance to 'real driving' differ between the independent driving exercises?

Table 3.6 shows the mean relevance to 'real driving' ratings for the three exercises. In all cases, the data show that the 'following road signs' exercise received the highest relevance ratings, and the 'turn in the road' received the next highest.

Since the data were not normally distributed, in each case a non-parametric Friedman's test was used to test for the statistical significance of the observed differences. 'Exercise' was used as the independent variable, and mean ranking of 'relevance' as the dependent variable.

Table 3.6: Mean relevance to real 'driving' ratings for the three independent driving exercises—learner drivers.

	Follow a series of verbal directions	Turn the vehicle	Follow road signs
	Mean (SD)	Mean (SD)	Mean (SD)
Exercise felt like real driving	4.07	4.41	4.71
	(0.73)	(0.53)	(0.48)
Exercise should be part of the driving test in the future	4.05	4.29	4.43
	(0.74)	(0.69)	(0.68)
Exercise prepares learners for real driving after test	4.19	4.27	4.57
	(0.80)	(0.60)	(0.52)

The analysis for 'felt like real driving' showed that the ratings differed significantly between the three exercises (Chi Square=60.99, df =2). Further analyses using Wilcoxon signed-ranks tests on each of the three two-way comparisons revealed that ratings were significantly higher in the 'following road signs' exercise than the other two (Z≤-5.00, p<0.001), and significantly higher in the 'turn vehicle in the road' exercise than in the 'following verbal directions' exercise (Z=-3.619, p<0.001).

The analysis for 'should be part of the driving test in the future' showed that the ratings differed significantly between the three exercises (Chi Square=21.28, df=2). Further analyses using Wilcoxon signed-ranks tests on each of the three two-way comparisons revealed that ratings were significantly lower in the 'following verbal directions' exercise than in the other two (Z≤-2.83, p≤0.005), which did not differ.

The analysis for 'prepares learners for real driving' showed that the ratings differed significantly between the three exercises (Chi Square=20.704, df =2). Further analyses using Wilcoxon signed-ranks tests on each of the three two-way comparisons revealed that ratings were significantly higher in the 'following road signs' exercise than in the other two (Z≤-3.961, p≤0.001), which did not differ.

Overall, the analysis of the items related to 'relevance to real driving' in the questionnaire suggest that the 'following road signs' exercise was seen as most relevant to 'real driving' after the test. This result is interesting in the light of previous findings that show drivers find this exercise the most challenging of the three in terms of workload, and make by far the most major errors when engaged in the exercise.

3.2.2.2   Qualitative data from learner drivers

Learner drivers unanimously agreed that the independent driving exercises were realistic and relevant to the 'real driving' that they expected to follow the test. They felt that these exercises took the control away from the instructors and allowed the learners to make independent decisions regarding the road environment. Learners felt that the exercises would facilitate their transition from accompanied learner to independent driver, by permitting them to practise some of the decision-making skills required for driving in the future.

Many felt that the current driving test placed too much emphasis on vehicle control skills and that this leaves learner drivers ill-prepared to deal with 'real' driving. Learner drivers who participated in the trial suggested that the new tasks would ensure that novice drivers were better prepared for the challenges of driving.

The following quotes illustrate some of the feelings regarding relevance to 'real driving' of the 'following verbal directions' exercise:

> *"I think it would be quite good because when you are out driving you are not necessarily going to know where you are going or be told where you are turning and when. It would be a good thing to practise remembering directions and how to get there. It was good to relate to real life driving."* (Female, 17 years)

> *"In future it would be a good idea, definitely. Because it's real driving, isn't it really, and these are the things that when you're on your own out there on the roads you need to be doing; you're not going to have the instructor or the examiner sat next to you and you need to know that you can follow signs and deal with hazards. Driving is not as easy as maybe you thought when you're out there on your own, you know. I think when you're sat with your instructor you're just taking instructions but when you're on your own it will be harder. When I do drive it's not going to be easy."* (Female, 29 years)

The following quotes illustrate participants' perceptions regarding relevance to 'real driving' of the 'turn the vehicle in the road' exercise:

> *"It's relevant because if you go down the road and you make the wrong choice and you need to turn you are not going to have someone telling you what to do."* (Female, 24 years)

> *"It just made me realise that, as soon as I pass my test, it is going to be just me and I concentrate more, because it's what I am doing."* (Male, 18 years)

The following quotes illustrate some of the perceptions regarding relevance to 'real driving' of the 'following road signs' exercise:

> *"Yeah, that's good, because in real driving, that's what you have to do- when you pass your test, you haven't got your instructor or an examiner telling you where to go all the time and you have to follow signs. It's quite hard to follow signs and driving- normally you just wait until you're told what to do, which, obviously, good preparation isn't for when you have passed your test."* (Female, 18 years))

> *"I think that it would be really good because it's what you end up doing when you pass your test, and I think it kind of stresses people that it's quite hard to drive after the test because I think when you are in your instructor's car and learning, you kind of think that it's quite easy because you are being told what to do, whereas, when I came to do this, the responsibility of getting somewhere was all on you, and I think that stressed me."* (Male, 17 years)

Learner drivers felt that participating in the trial made them appreciate the difficulties and challenges of 'real driving' and, if the new tasks were incorporated into driver training and assessment, it would allow them to practise the skills of independent decision-making and assessing the road environment. Despite their poor performance in the tasks (specifically the 'following road signs' exercise) candidates reported that they enjoyed the new exercises. It was interesting to note that many of the candidates found the exercise of 'following road signs' to be most relevant to real driving, as the following quote demonstrates.

> *"I did not do well in that task (following road signs), but I think it's what I will do most and it made me realise how difficult it will be to drive when I pass my test."* (Male, 20 years)

3.2.2.3 How do ADI ratings of relevance to 'real driving' differ between the independent driving exercises?

Data on the issue of relevance were also collected from ADIs. Table 3.7 shows mean ratings for the same questions given to the learner drivers on this issue. In addition, ADIs were asked a question on the degree to which they felt the exercises would aid ADIs and examiners in discriminating safe and unsafe drivers. Only nine ADIs returned data, and this sample is not sufficient to carry out inferential statistical tests to check for the significance of any differences observed between the exercises. However it is still informative to examine the pattern of the data.

Overall, the data show that ADIs' ratings of relevance agreed with those of learner drivers. 'Following road signs' tended to be given the highest ratings. It was also given the highest rating in terms of its ability to discriminate between safe and unsafe drivers.

Table 3.7: Mean 'relevance to real driving' ratings for the three independent driving exercises—ADIs.

	Follow a series of verbal directions	Turn the vehicle	Follow Direction Signs
	Mean (SD)	Mean (SD)	Mean (SD)
Exercise felt like real driving	4.44	4.56	4.67
	(0.53)	(0.53)	(0.50)
Exercise should be part of the driving test in the future	4.78	4.11	4.67
	(1.09)	(1.05)	(0.50)
Exercise prepares learners for real driving after test	4.56	4.22	4.56
	(0.53)	(0.83)	(0.53)
Will help ADIs and examiners better discriminate between 'safe' and 'unsafe' drivers	3.78	3.78	4.22
	(0.44)	(0.97)	(0.44)

3.2.2.4   Qualitative data from ADIs and DSA examiners

The key theme to emerge from the ADI examiners regarding the relevance of the independent driving exercises to 'real driving' was that it <u>prepared learners for solo driving.</u> The ADIs and DSA examiners perceived the independent driving exercises overall to be relevant to the 'real driving' that learner drivers will need to do after they have passed their driving test. Many of the ADIs felt that these tasks equipped the learner driver with skills required for solo driving. ADIs felt that the current driving test concentrates on training and testing candidates on vehicle control skills and fails to prepare them for driving independently (i.e. making independent decisions and navigating to destinations).

> *"Think that it's opened his eyes to the whole approach to the driving test and, looking at pupils, the way they react to it, it's interesting, you realise how little they know when they actually come to taking their driving test. I found that it's opened my eyes quite a lot, I've been quite impressed with it."* (ADI, Male with over 6 years of experience)

> *"It's a good idea because it's what they would do in a real world situation, and it's a thing they'd have to do after passing their test, whether it's going to work, or going to school, or wherever. It would prepare them for once they've passed their test. They'll be independent and not relying on someone telling them where to go."* (ADI, commenting on the task of following directional signs)

The 'follow a set of verbal directions' exercise was perceived to be useful to prepare candidates for independent driving. Introducing this task was seen as having the potential for making the transition from accompanied driver to an independent driver easier. ADIs suggested that after passing the test, candidates were likely to encounter situations where they would need to follow verbal directions to a destination, and therefore that training candidates to accomplish this task had great benefits. This is reflected in the following quotes:

> *"Once they've passed their test and they're lost or whatever, they'll have to ask for directions, so they can get used to doing it. It's just one of those things they have to do, so they may as well get used to it."* (ADI, Male with 10 years experience)

"Thought that it would give them a much better approach to real-life driving and dealing with problems that they might face when they're out on the road on their own." (ADI Male with over 6 years experience)

Similarly, ADIs and DSA examiners felt that after the practical driving test candidates would need to make decisions on the type of manoeuvre appropriate to 'turn the vehicle around', where to conduct such a manoeuvre and to make sure they would do so in an appropriate manner. The introduction of this new independent driving task was perceived as relevant, as the following quotes illustrate:

"I think it's a very good thing because it really does put the ball in the students' court. In real life, who really cares if you go three car lengths back when you reverse around a corner? Actually, people would prefer you to get out of the road more quickly than that. It really is turning it more into real life driving than what we do at the moment. To them, they say 'well, I would never do this manoeuvre in real life because I don't like it', so I think, what's the point of teaching them it?'" (ADI Female)

"I think it's something that people do have to do, they can read a map, they can get into town, I know that a lot of people have got sat navs, so they can get to a town, but they can't find landmarks, or whatever, so there are occasions when they're going to need to ask somebody." (Examiner 1)

ADIs had favourable views regarding the introduction of the 'following road signs' exercise. It was felt that this task would encourage candidates to plan their route, to be aware of the road conditions and to make decisions for themselves, which would align driver training and assessment to real life driving.

"Out of all the elements we've been talking about, this is the biggest one for me. Should they go the wrong way, it's then down to the pupil to see where they should be going themselves…they're having to look at the road signs, look a bit further away and they've got to be aware of what's happening around them. It reduces the trauma of going somewhere new for the first time." (ADI, Male with 3 years experience)

"I liked it, they (the pupils) really are having to think for themselves and work out a route. Talking to the candidates after the trial, I realised how little they actually know about signs, especially more complicated signs like a roundabout on a dual carriageway." (ADI, Male with 6 years experience)

The DSA examiners who conducted the trials suggested that the 'following road signs' exercise was relevant to 'real driving' and had the potential to bridge the gap between driving supervised as a learner and independent driving as a novice driver.

"Marvellous!! I think that if I had to pick out one, it would be the signs, simply because that really is something that people do on a day to day basis. And that's the one that I've noticed where the most problems have occurred. The feedback is that they didn't realise how difficult that actually was, to multi-task, to do everything- to see the sign, to plan it, to take the information from it, how they leave the roundabout. I think that's very good. Relevant to what they're going to be doing later on, they're just going to be much better prepared. I think that the driver would be much, much better prepared for real life, independent driving than if this was introduced." (DSA 1)

"I was a bit sceptical about how much difference it would make and I was surprised on how much difference it did make, when they were left to their own devices. When they were directed, things went reasonably well but how things went pear shaped when they were following road signs. They did surprising things, they changed direction unexpectedly. They could not cope with the extra bit of work they had to do. In the current test, the examiner plans the instructions in such a way that they act as a trigger to the MSM

routine or sequence of events. They automatically go into this routine. But when they are actually looking for directions or trying to remember where they are going, they are concentrating on other things, signs and so forth." (DSA 3)

Overall the qualitative data from learner drivers suggests that they felt that incorporating the new Independent Driving tasks in the driver training and testing would teach candidates goals and context of driving (Level 3 of the GDE matrix) and further gain appreciation for the goals for life and skills for driving (Level 4 of GDE matrix). In addition to preparing learner drivers for 'real driving', ADIs felt that the tasks teach learner drivers valuable skills of independence, making own decisions while driving, using their initiative and increasing their confidence on the road.

3.2.3 What are the perceived advantages and benefits of the independent driving exercises?

In addition to understanding whether the exercises are seen as relevant to real driving, it is important to understand in what way the exercises are likely to benefit learner drivers. In this section, we report data from the qualitative interviews on this question.

Summary

What are the perceived advantages and benefits of the independent driving exercises?

- Learner drivers, ADIs and DSA examiners suggested that independent driving tasks had the potential to benefit learner drivers in their transition from accompanied learner driver to solo driver, as it encouraged them to exercise their independence, autonomy and choice. In a test environment, the new proposed elements have the potential to remove the external cues that candidates receive from examiners and instructors and assess their ability to drive safely without such cues. The independent driving exercises, if introduced into training and testing appropriately, could give candidates the opportunity to consolidate the skills they have acquired in their driver training and to act responsibly for their own and others' safety.

- Despite the independent driving tasks being perceived as difficult and challenging, learner drivers advocated the incorporation these new tasks in the driver training and assessment protocol. They found it difficult to remember verbal directions, make independent decisions, and multi-task while following directional signs. However, candidates felt that with adequate training they would find these tasks easier.

3.2.3.1   Qualitative data from learner drivers

A number of themes emerged from the interviews with learner drivers, and these are expanded below with indicative quotes.

Independence and autonomy of decision making

Many learner drivers participating in the trial reported to have enjoyed having control of their driving, without constant direction and input from their driving instructor or the examiner.

Indicative quotes regarding the 'following verbal directions' exercise include:

> *"The fact that I was driving on my own without someone telling me what to do...it was nice to know in advance where I was going."* (Female, 17 years)

"It's made me think it's something I should be learning anyway and more responsibility behind the wheel rather than being told what to do. I enjoyed being able to see the mistakes I made and correct them along the way." (Male, 25 years)

Interestingly, candidates who found driving stressful and candidates who reported to be nervous found the autonomy of the exercises enjoyable. The new tasks were considered a useful way to consolidate their learning:

"Just the fact that even though I was feeling stressed, it still felt like I was the one in control of the driving- I was the one who had to remember where we were going, and I think that's the sort of thing you have to do when you're driving on your own- think about where you're going and plan more- planning it in your head." (Female, 24 years)

The tasks removed the external cues that the instruction from an instructor or examiner gives candidates and this was perceived by candidates to be testing their driving abilities of driving in the real world:

"I think it should be included in the driving test because as soon as the instructor says 'turn left', that is a cue for you to look in your mirror and signal and if that's taken out of it it's up to you. You are working under your own steam. I like that you can make your own decisions and at your own pace." (Male, 25 years)

Learner drivers enjoyed having the choice to make their own decisions of how and where to turn the vehicle. This allowed them to demonstrate their strengths and assess the road environment, while making decisions to turn their vehicle, as the following quotes illustrate:

"I would love it, because then I could do the manoeuvres that I can do best!! I would love it, and as well because I came into that road and I thought, 'right, I'm going to do a left reverse', but there was a learner driver already practising a left reverse, so I thought, 'ok, I'll do a three-point turn' and I think that you'd do things like that anyway when you were out driving when you were qualified, because you would pick what seems like the safest manoeuvre to do at the time." (Female, 24 years)

"It made me stop and think why did I do that? It made me realise that I need to plan before actually doing something. It made me realise that I need to think for myself. It was quite a learning experience. I thought that it would have been quite easy but it wasn't as easy as I thought it would be." (Female, 27 years)

In the 'following road signs exercise', candidates reported to have gained an appreciation of road signs, early planning and driving safely:

"At the minute, because the examiners are telling you where to go, you're not really looking at the signs, apart from the speed (limit) signs." (Male, 18 years)

"It taught me to look for signs early and to be planning where I might be going and as soon as I see a sign making a judgement on where to go and think about lane positioning." (Female, 27 years)

Skills for future driving

Learner drivers felt that participating in the independent driving tasks gave them skills for future driving. Many felt that this was an opportunity to demonstrate skills of initiative, appreciate the need to remain calm under pressure and concentrate while driving. Learner drivers felt that the independent driving exercises made them feel more confident about their driving abilities. Several skills were highlighted including:

Initiative:

> *"(It was) really important, because when you pass, there will be times when you go the wrong way, and you will have to use your own initiative and think of the safest and best way of doing it."* (Female, 22 years)

Remaining calm under pressure:

> *"It taught me that you can get lost and to try and stay calm and to try and follow directions and store information in your head."* (Female, 26 years describing the task of following verbal directions)

Concentrate on the driving task:

> *"I think it would be a good idea. Because sometimes when I'm having lessons you just switch off a bit and this helps you concentrate. It helped me concentrate in what direction I'm going more."* (Female, 31 years from an ethnic minority describing following verbal directions)

Multi-tasking:

> *"I think it'd be good because it is more relevant to when you pass your test and start driving by yourself, being able to direct yourself. It's a multi-tasking thing - you need to be able to direct yourself, decide where to go, as well as thinking about other things and control the car."* (Female 17 years describing her experience of following directional signs)

Confidence:

> *"It was down to me to do it correctly without help on where to do what. It made me more confident in my ability."* (Male, 22 years, describing his experience of following directional signs)

<u>Implications for safety</u>

Candidates highlighted that safe driving required consideration of other road users and their relative vulnerabilities. Candidates suggested that the new exercises addressed the social aspects of driving, facilitated their awareness on the road and encouraged them to act as mature and responsible drivers. This is illustrated by the following quotes:

> *"Gets you thinking of the hazards which could be in front of you or behind you and to be beware of other people, so that everybody is safe."* (Male, 17 years)

> *"It taught me to be more aware of what's happening because it's quite easy to focus on just what you are doing but you also have to think of where you are going and really think about doing what you are doing safely."* (Female, 26 years)

3.2.3.2   Qualitative data from ADIs and DSA examiners

Perceived benefits of the independent driving tasks that emerged from interviews with ADIs and DSA examiners were similar to those identified with learner drivers. The following quotes illustrate the findings.

<u>Independence and autonomy of decision-making</u>

The current test was described as 'mechanical' by the driving instructors as learners were frequently found to react to cues given by the instructor or examiner rather than making independent driving decisions. In the absence of the external cues and instruction from the ADIs and examiners, candidates were often perceived to be ill-equipped for independent decision making. According to the ADIs and DSA examiners, the inclusion of independent driving exercises in training and testing

encourage candidates to look further ahead, which will improve their driving skills and prepare them for making independent decisions.

> *"I think it teaches them to be independent. Hopefully it will encourage them not to think of themselves as a learner the day before their driving test but a novice driver or an inexperienced driver and I think hopefully that should have some positive repercussions on them."* (ADI, Male with two years experience)

The below quote is representative of what ADIs and DSA examiners thought of the 'follow a set of verbal directions' within the context of this theme:

> *"This is a good thing to put into a practical test because it makes the driver think more and to observe more on the road. It's a good thing because they're independent. It's got to be of immense value to them because the training at the moment is robotic- they're told what to do, and they then know to start checking their mirrors, etc, whereas by giving them a set of directions to follow and watching what they do- they themselves have to be more alert because they're making decisions as they would do after passing the test."* (ADI, Male with 6 years experience)

The below is indicative of opinions of the 'turn the vehicle' exercise:

> *"I would say that that's a good test of their ability to actually handle a situation rather than just a mechanical turn right, turn left, do a turn in the road. It gives them a measure of independence which they need to have for normal situations. They would find that once on the road they could handle this independently. It makes their life easier and safer because they are not suddenly faced with a decision. It gives them the independence to make the choice and then it's likely if anything to improve the skills that they have got."* (ADI, Male with 3 years experience)

A DSA examiner suggested that despite the difficulties associated with the new tasks, candidates seemed to enjoy the independence and freedom the tasks gave them.

> *"That was quite a good one. What I found was that they like the independence, because as you know, they have been very tied about the kind of manoeuvre they can use. A lot of them had a degree of difficulty deciding a safe, convenient place to carry out the manoeuvre. I think the people enjoyed the freedom of doing the manoeuvre they wanted to do."* (DSA 2)

> *"The following the traffic signs which were a little bit unusual, I felt, because all the candidates felt that this was the most relevant and the most realistic. All the candidates enjoyed it as they enjoyed the freedom and independence and yet, in the drive from our point of view that was the one that they got most badly wrong. The amount of serious and dangerous faults that were going to occur seemed to happen in that section. It just seems an odd combination that they enjoyed it but they got it wrong at the same time."* (DSA 2)

The below are indicative of the thoughts of ADIs and DSA examiners regarding the 'follow road signs' exercise:

> *"Thought that it would give learners independence from ADIs and give them opportunity to plan routes, work out which exits they need and prepare them for solo driving."* (ADI, Male with 6 year experience)

Removing the constant stream of instruction from the ADIs and examiners was seen as meaning that the candidate could not use these instructions as a 'cue' to conduct the mirror-signal-manoeuvre (M-S-M) or the mirror-signal-position-speed-manoeuvre routines, as illustrated by the following quote:

"I think the biggest part is taking away the verbal prompt. You spend your driving career with someone sitting next to you. Apart from the fact that they are given direction as soon as we speak they know that we must be approaching something so it's time to check their mirrors. So it means that they have to recognise the hazard themselves and then start their timing of the MSM routine rather than having a prompt from the instructor/examiner." (DSA, task of following road signs)

<u>Skills for future driving</u>

Most ADIs and DSA examiners felt that the independent driving exercises encouraged learner drivers to develop useful skills for solo driving, such as using their own initiative, potentially increased their confidence and removed some of the anxiety associated with driving without instruction and supervision.

"You will obviously feel more confident if you are used to finding your own way because it involves more risk assessment, your whole view of driving basically. You have to think so much more than just following instructions and I think that's one of the main benefits. I think it's probably one of the major improvements they could do to the test." (ADI, Male commenting on task of following verbal direction)

"I think it was useful for candidates to use their initiative to choose the location and carry out the manoeuvre of their choice in a safe way. It was more testing for candidates to choose a location that was safe and legal. But all the ones I did used the turn in the road. There is the risk that they would only choose the simplest task. All candidates thought that it was realistic and something they would do when they were driving on their own. How valuable it is to road safety, I'm not so sure! I'm not sure it is much better than we have now." (DSA 3, task of turning the vehicle)

<u>Implications for driving safety</u>

Giving candidates the autonomy of making their own decisions was seen as having implications for safety on the road. ADIs were concerned that candidates' performance during the independent driving exercises deteriorated because they were unable to control the vehicle. They, however, agreed that the future driving test should be testing for 'higher order' skills (GDE-matrix) and not merely the ability to follow directions from an examiner or ADI.

ADIs observed that without training candidates for higher order skills, such as independent driving and decision-making, candidates were likely to lose some of their basic vehicle control skills during the exercises. Therefore, it was seen as imperative to introduce these new independent driving tasks to the driver training as well as assessment to ensure that candidates' core driving competencies were sufficiently developed and automatic to function properly, even when the driver's attention was focused on other goals such as following road signs. The following quotes illustrate this:

"It's good to see how candidates act under pressure. It's interesting to see how their driving style changes when they've got a couple of extra things to do. I feel that their mirror-signal-manoeuvre kind of disappears a bit- they're concentrating more on looking ahead and signs, and their car control's not quite up to scratch." (ADI, Male commenting on the task of following verbal directions)

"Yes, they made more faults, well, at the moment they did, but they were so used to being told exactly where to stop, and where to do the manoeuvre because they've trained that way." (ADI, Male commenting on the task of turning the vehicle)

The DSA examiners noted that the 'turning the vehicle' exercise had the potential to teach candidates about safety—specifically to encourage candidates to consider the safest way of carrying out a manoeuvre and to practically apply the knowledge obtained in the theory test. DSA examiners felt that this task could potentially transform learners' knowledge into awareness and understanding of the rules of the road.

> *"I think it's very good, because at the moment, they're spoon fed- they're taken into roads, they're told exactly where to turn and which manoeuvre to use, but they've had no idea why the examiners have stopped there (i.e. because it's safe- there's no street furniture, there are no vehicles, no junctions, etc.). There's more to it, it's all about location. That (exercise) works quite well because it teaches them about safety … because you may get people who would pick unsafe places to do it- I think that we had one candidate who opted to pull into a side road, and try and reverse out, that's obviously very unsafe, and against the law, so it would make them understand fully that they can't do that manoeuvre, so consequently, they are going to be safer, because whenever you do any manoeuvre, you're putting yourself into a dangerous situation, so they need to weigh up the pros and cons of it."* (DSA 3)

ADIs and DSA examiners considered that the independent driving exercises, particularly the task of 'following road signs' would increase the standard of the driving test and have the potential to decrease the accident rates among novice drivers.

> *"It really would prepare them for after…and it certainly would cut down on a lot of accidents as well, because how many young drivers have accidents at roundabouts because they've never had to do it on their own?"* (ADI, Male with 12 years experience)

> *"I think it should be as soon as possible. It's one of the failings of people that pass their test now, they are directed all around and when they go in the car on their own they feel totally alone. This is where they make mistakes, they are trying to control the car and by looking at signs they are losing their positions, and this is when accidents can happen."* (ADI, Male with 1 year experience)

3.2.4 What are the perceived difficulties and challenges associated with the independent driving exercises, including practical implications for training and examining?

The perceived challenges associated with introducing the independent driving exercises are addressed in this section based on participants' responses in the interviews.

Summary

What are the perceived difficulties and challenges associated with the independent driving exercises, including practical implications for training and examining?

- There are implications for training and assessment, which align with the findings from the impact of the exercises (particularly 'following road signs' on performance. ADIs expressed concerns that without correct training, learner drivers would find it difficult to perform the new exercises well. In addition, suitable locations would be required for assessment—especially for the 'turn vehicle in road' and 'following road signs' exercises.

- The majority of the candidates and ADIs perceived the independent driving exercises to be socially inclusive (i.e. individuals were unlike to be disadvantaged due to their disability or ethnicity). However, both the learner drivers who considered themselves as dyslexic suggested that that they would find the independent driving exercises challenging. ADIs suggested that it would be challenging to train people with learning disabilities and those from ethnic minorities in the independent driving exercises.

3.2.4.1 Qualitative data from learner drivers

Several themes emerged from learner drivers when discussing difficulties and challenges associated with the independent driving exercises. These are outlined below.

Difficulty and challenges for the candidates

Despite perceiving the tasks as being relevant to later solo driving, candidates felt that the task were challenging and that each task had its particular difficulties. For the 'follow a series of directions' task, this included the need to remember a set of four to five verbal directions which required multi-tasking and memory rehearsal. Candidates suggested that they needed additional training to ensure that they were able to make independent decisions. Despite the perceived difficulties candidates agreed that these tasks improved their driving skills and should be introduced in the driver training and assessment protocol.

> *"It was kind of nerve-wracking in case I forgot something, in case I forgot whether to change gear approaching a roundabout because I was thinking about where I was going…or whether I'd forget the turning- it worried me, I didn't dislike it, I just panicked more."* (Female, 17 years)

> *"I found it hard but I think it should be introduced. I would not mind it. It would be good experience. It was handy to know where I was going before hand."* (Male, 21 years)

With regard to the task of turning the vehicle, some learner drivers found having a choice and having the responsibility of making their own decisions difficult and challenging. However, they appreciated that these skills are useful for later solo driving.

> *"…that makes it so much harder, I think going to a road and being told 'do your turn in the road or reverse around a corner,' you kind of know what you're doing, whereas this one, you have to decide, and I couldn't decide what was the best thing to do. I do think that it's a good thing to include, it was very challenging, and it made me think a lot more. I actually like being challenged."* (Female, 29 years)

"I suppose (I did not like) being left the choice of what to do because I was scared of getting it wrong…. "It's quite relevant because you would probably have to do that quite a lot when you are driving." (Male, 18 years).

The task of 'following road signs' to a destination was perceived as difficult because it involved multi-tasking. Lack of adequate training made the task even more difficult for candidates. Despite the difficulties posed by the tasks, candidates welcomed the challenges because they felt they prepared them for post-test solo driving.

"I found it difficult to take my eyes of the road to look at the signs. But I thinks it's a good idea because you won't be driving around aimlessly, you will be meaning to go somewhere." (Male, 19 years)

"It was just quite hard because I've never done it, ever before, I've never looked at a road sign, but I will be doing that when I pass, so it'll be good to know how to do it." (Male, 18 years)

Implications for driver assessment

Learner drivers suggested that the independent driving exercise of 'following verbal directions' would add to their test anxiety and some expressed concerns regarding their ability to remember the verbal directions in test conditions.

"I know if it was me in a proper test I would keep forgetting. I think it would be useful to do, but I know if it's me in the test, I would become anxious and forget half the directions given to me….If it was a proper test, I would have forgotten the directions because I was nervous." (Female, 17 years)

"It was quite hard to remember because you are under quite a lot of stress in your driving test. In a normal situation, I think it would be ok, but under the pressure of the test, it is quite hard." (Male, 18 years)

However, for some candidates, independent driving tasks were perceived as a distraction from test anxiety.

"It took my mind of the fact that I was doing a test and made me less nervous." (Male, 19 years, task on turning the vehicle)

Problem with testing manoeuvre

Candidates expressed concerns regarding the introduction of 'turning the vehicle' and suggested that they were likely to only practise manoeuvring skills they found easy, and that this may result in the lack of practice of other manoeuvres.

"You'd only have to learn one manoeuvre- turn in the road or reverse around a corner, which I guess isn't good because if you were bad at one, you just wouldn't have to learn it and probably wouldn't do it after your test. But in some occasions you have to reverse round the corner, like in a narrow close, and then you won't be able to do it." (Female, 18 years)

3.2.4.2   Qualitative data from ADIs and DSA examiners

ADIs and DSA examiners raised several points in connection with the introduction of the new components. These are outlined below.

Practical implications for training learner drivers

ADIs and DSA examiners were positive about incorporation of the independent driving tasks into driving lessons. The majority felt that the exercises should be introduced after the learner drivers had mastered the basic car control skills and were proficient and competent to drive.

The following quotes are indicative of opinions on the timing for each of the new components, starting with 'following verbal directions' exercise:

> "Once someone has got the basic driving skills and they are confident driving on the road it could easily be done with giving them directions, the way it was done in the trials and build it up slowly. Would wait until they were very close to test standard. I don't think it's something you can introduce in the earlier stages because they've got too much to be thinking of." (ADI, Male with 3 years experience)

> "Well, initially on the lessons I'll give them directions. Normally after about 10 or 12 hours tuition I'll get them to follow signs or take me to a certain place not too far away. The next stage I give them directions and then just see how they do it. Mostly I do that coming up to test standard." (ADI, Male with 18 months experience)

Regarding the 'turn the vehicle' exercise:

> "I don't anticipate there being any problems in teaching students this task. We teach them to do the manoeuvres anyway. If this task was introduced we would just have to teach them how to make decisions regarding where to do the manoeuvres and I would do that when we teach them (candidates) the manoeuvres." (ADI, Male with 3 years experience)

Regarding the 'follow direction signs' exercise:

> "It'd be very easy. I'd just tell them that we're going to go to, for example, Buckingham, and say that 'I'd like you to follow the signs'. Would introduce this fairly late on when the candidate is approaching test readiness, when their physical driving skills have become more automatic. I think that'd be no problem at all to include in the lessons, and it wouldn't eat into too much time." (ADI, Female with 4 years experience)

> "If candidates were trained to do this, they would definitely be able to do it. Driving instructors don't give students enough free reign and when they come to test standard they should be able to make decisions and this task would be pushing them to do that." (DSA 3)

ADIs were unanimous in their agreement that introducing the independent driving exercises to the test had implications for training, both in terms of the content of driving lessons, and the process used.

> "I suppose in some respects changing the driving test is about changing the way driving lessons are taught." (ADI, Male with 2 years experience)

> "It should be an integral part of training- the more they put into the lesson, the more they retain." (ADI, Male with 6 years experience)

Driving instructors felt that in incorporating independent driving in the driver training and assessment, the culture among drivers, instructors and examiners needed to change, to encourage candidates to be less reliant on the instructor or examiner and to think independently for themselves.

> "I think training would need to be improved…I've been trying to incorporate it into my training since I started the Nora[15] project because I thought it's a pretty good task. Some people, you know, they pick it up straight away, perfectly fine. There are some people out there who are really struggling with the entire principle of 'you want me to think'. How do you get through to some of these people? We're (ADIs) going to need training in how to get through to certain people to be able to get them to think the right way." (ADI Male with 2 years experience)

> "I would think getting their head round that it's not a test of directions. The important thing for them to get their head round is that it doesn't matter if

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[15] 'NORA' was the name given to the project internally at DSA. The name was also used by ADIs when booking learner drivers in.

they get the directions wrong as long as they were driving safely and in the correct way." (ADI, Female with 2 years experience)

<u>Implications for assessing learner drivers</u>

ADIs raised concerns over the feasibility of including the 'following a series of verbal directions' task into the new GB driving test. This included:

Impractical to implement in test conditions:

> *"I'm not sure of the validity of it. It takes up quite a lot of time to actually put into place…you've got to give the instructions, then there was the explanation that you were asking a passer-by for directions, so explaining the task, then he had to tell them the actual directions probably 2–3 times to get it in."* (ADI Male with 2.5 years experience)

Adds to test anxiety:

> *"I don't think it's all that practical from my experience of being a driving instructor because when a student comes out of a test centre, their mind is all over the place and they don't drive normally in the test anyway, I think that (exercise) is just going to confuse them. It tests memory rather than skill in driving - whether they can remember information and adds to test anxiety."* (ADI, Male with 3 years experience)

In comparison, the task of 'turning the vehicle around' was considered to reduce test anxiety. The manner in which the task was introduced as a real life situation was seen as having the potential to help candidates who were anxious about their test:

Reduces test anxiety

> *"Thought that the wording of the exercise "imagine you've passed your test" made them think differently- it removed a bit of the formality. That removal of formality meant that most people would pick what was easiest for them, I think that it's great that they've actually got the choice to do that. So giving pupils an option, and letting them use their initiative, hopefully, it'll boost their confidence a little bit."* (ADI, Male with 10 years experience)

ADIs, however, also felt that the task of 'turning the vehicle around' may see candidates favour the manoeuvre that they found easy.

> *"Of the nine candidates I have taken to the trial, six candidates did turn in road and three did a reverse around a corner. If given the choice, all candidates would take the easier option; it's just human isn't it? I don't see it as a problem as long as it's in a convenient place and safe."* (ADI, Female with 2 years experience)

ADIs observed that the lack of training in making decisions on where and how to complete a manoeuvre left candidates unable to assess the suitability of the task. Additionally, they felt that the exercise may result in the loss of skills that are currently part of driver training and testing:

> *"Making the decision about where to do the chosen manoeuvre was kind of interesting, because it was down a road that they'd never been down before…I think that they had problems working out where they were going to do it, I could see their brains working, and when they did find somewhere to do it, it was in quite an interesting place, like one of them pulled up across somebody's drive, or pulled up to block somebody's drive….they all seemed a bit nonplussed with it, and took the easy way out, with the manoeuvre that they could do easiest, but I guess that's human nature isn't it? Just allowing people to do the manoeuvres that they want would be very dangerous…I think it'll develop a race of people who really can't park, or turn their cars safely. I think that part of the trial was possibly flawed."* (ADI, Male with 6 years experience)

ADIs raised some concerns regarding the feasibility of finding suitable locations or test routes if independent driving elements, and the 'following direction signs' task in particular were included. They also suggested that there was a danger of candidates being 'coached' on routes:

> *"It's quite difficult to find signposts that make it a challenge. That could be a problem in teaching and therefore it could be a problem in the test as well."* (ADI, Male 3 years)

> *"We have to find a way to avoid them being coached on a specific route."* (ADI, Male 1.5 years)

Concerns about suitable locations were also expressed by DSA examiners:

> *"The only problems possibly are going to be in big cities (London, Birmingham, and Manchester) where there maybe aren't that many consecutive signs for one place. However, I think that could be overcome, what you would do is change the signs they were looking at, so follow signs to X for two junctions and then follow signs to Y. There are some places where it would be more difficult, but others where it could be done really easily."* (DSA 1, task of following directional signs)

> *"From a logistics point of view you have to be careful selecting the area, making sure you have plenty of choices. The area we used we had 2 potential right reverses, 2 potential left reverses, and lots of opportunities for turns in the road. So as long as the area that is chosen has lots of options to do it then it will be fairly straightforward. The choice of location will be paramount."* (DSA 2)

3.2.5 Which characteristics of drivers impact on performance and perception of the independent driving exercises?

As well as examining the independent driving performance of the whole sample of learner drivers, it is useful to ask whether there are particular characteristics of learner drivers that predict whether or not they find the exercises easy or difficult. In this section, we discuss analyses that look at links between error rates and workload ratings of the independent driving exercises and the characteristics of age, gender, ethnicity, and personality ('the Big Five' as measured by the Ten Item Personality Inventory—Gosling et al., 2003). We also examine whether the amount of previous formal training or informal practice is related to performance or perceived workload.

Summary

Which characteristics of drivers impact on performance and perception of the independent driving exercises?

- None of the following characteristics of learner drivers were found to be associated with error rates, in the independent driving exercises overall, or in the 'following road signs' exercise alone: age, gender, personality variables or ethnicity. Thus we can conclude that the independent driving exercises were 'fair'—the difficulty associated with the exercises was not confined to specific 'types' of people.

- There was also no association between error rates and the amount of formal training or informal practice received by learner drivers. This suggests that at present, there is nothing included in the formal training as part of the GB training protocol, or the informal practice they receive when driving with friends and family, that prepares them for the independent driving exercises trialled.

- Age, gender, ethnicity, amount of previous formal instruction, and previous practice also showed no significant relationship to ratings of workload. Personality did however: those learner drivers who were either high in 'neuroticism' or low in 'openness to new experience' rated the 'follow verbal directions' and 'follow road signs' as more difficult.

- Due to the low numbers of participants with such issues, it is not possible to conclude with any confidence what the impact of language difficulties or learning disabilities on performance in the exercises is likely to be. Further work on this issue will be needed to establish how such individuals will need to be supported, if at all.

3.2.5.1   Effect of driver characteristics on performance (errors)

Non-parametric Mann-Whitney tests were conducted to assess whether there were gender difference on performance in the three independent driving exercises. The analysis showed that there were no significant differences between the performance of men and woman on major errors or minor errors in any of the exercises.

In addition, a Mann-Whitney test was conducted to assess difference between the ethnic majority and ethnic minority participants in performance in the three independent driving exercises. The analysis showed that there were no significant differences between the performance of the ethnic groups on major errors or minor errors in any of the exercises.

We also ran correlations (Spearman's rho) to assess whether error rates were related to the age of the candidate, personality of the candidate, and the amount of formal driving instruction and practice with family and friends. No significant associations were found between the characteristics and error rates.

3.2.5.2   Effect of driver characteristics on ratings of workload

Further analyses (Mann Whitney tests) were conducted to check if men and women differed in terms of their subjective ratings of workload. The analysis showed that there were no significant differences between genders on workload ratings for any of the independent exercises. Similarly, there were no differences in perceived workload between members of the ethnic majority and ethnic minority in the three independent driving exercises.

Correlations (Spearman's rho) were carried out to assess whether there were any significant relationships between age, personality dimensions and formal instruction

and informal practice with family and friends with subjective workload ratings on each of the three independent driving exercises. The analysis showed that there were no relationships between age, formal instruction and informal practice with workload. However, the findings suggest that personality is related to subjective workload. Individuals who considered themselves less emotionally stable (high in neuroticism) were more likely to perceive the independent driving task of following verbal directions and following directional signs as difficult. In addition, individuals who considered themselves open to new experiences were likely to find this task less difficult. These data are shown in Table 3.8.

Table 3.8: Correlations between personality and subjective workload ratings.

	Emotional stability	Openness
Workload (following verbal directions)	-.292**	-.229*
Workload (turn the vehicle)	-.113	-.266**
Workload (following directions signs)	-.216*	-.235*

*Correlation is significant at the 0.01 level.

**Correlation is significant at the 0.05 level.

Overall the quantitative analyses suggest that the independent driving exercises were not 'unfair' to any specific 'type of person'.

3.2.5.3 Qualitative data from learner drivers

A large majority of candidates who participated in the trial spoke English as their first language. Eighteen candidates considered English to be their second language.

> "I found this (following road signs) a little hard because it takes me a bit longer to read things in English. I found this task hard, but I think with practice I should be able to do it. It may take me a longer to perfect it. It's much easier to read things than to talk about the hazards, because English is not my first language so it's difficult for me to explain." (Female, 30 years, Asian)

There were only two candidates who considered themselves as having learning difficulties. These candidates felt that their disability may influence their performance on the independent driving tasks.

Following verbal directions:

> "That I had to concentrate on which way is left and which way is right." (Male, 25 years, candidate considered themselves to be dyslexic)

Following directional signs:

> "Found this really hard because I was dyslexic. But it should be included in the test, so that people can be more skilled in doing this." (Female, 30 years, candidate considered themselves to be dyslexic)

The task of following verbal directions was perceived by some candidates as being dependent on memory.

> "Well, as I was saying, it does kind of show about real driving but then it's also a lot about memory as well. If someone has a bad memory it will be more difficult. It doesn't really show their driving skills." (Female, 27 years)

> *"There was a lot to remember and I'm not very good at remembering so much stuff in my head."* (Female, 17 years)

Overall, the number of participants in the study with learning difficulties and language problems (i.e. English not as first language) was not sufficient to draw firm conclusions regarding the effects of these variables on performance of the independent driving exercise.

3.2.5.4   Qualitative data from ADIs and DSA examiners

Some ADIs felt that the independent driving exercises could easily be completed by all candidates and that no particular group of candidates were likely to be unfavourably disadvantaged.

> *"Nobody really struggles. The instructions were very good, they were very precise and obviously, they were told that if they didn't remember, they could ask for them to be repeated- so no, there wasn't a problem at all."* (ADI, Male with 7 years experience)

> *"I don't think a certain candidate types would struggle. I've taken a good mix, and wouldn't say that one group's struggled more than any others."* (ADI, Male with 1.5 years experience)

The task 'turn the vehicle' exercise was considered as being most socially inclusive.

> *"I don't see any problems at all, language doesn't come into it, memory doesn't come into it. As long as you can make decisions, you're fine."* (ADI, Male with 3 years experience)

> *"Don't think that any candidates would particularly struggle. It just gives people the chance to work with their strengths rather than their weaknesses. At the moment, it's a case of 'you will do as you're told, if you don't do it, then you fail', with this, it gives them the choice, and the freedom and lets them use their strengths to get through the test. It doesn't matter who the student is, they know their strengths and what's best for them, therefore they can help themselves through it really."* (ADI, Male with 3 years experience)

Both, ADIs and DSA examiners expressed concerns regarding the memory element of the 'follow verbal directions' exercise.

> *"I thought that this was a pretty good thing that we should incorporate, I think, the only thing that I have a concern with is that there are some people who really get nervous on tests and I've been trying to put it into the training recently, and it's quite a difficult task for some of the students to do. I think the biggest concern for most students would be 'what if I lost my way, what if I didn't go the right way, am I going to fail because I didn't go the right way'".* (ADI, Male with 6 years experience)

> *"The problem of having it in the test is that people are going to be afraid of forgetting, and so if you've got a candidate who gets to the end of a road and says 'sorry, where am I going?' we've got no choice, but to then prompt them. It's a good idea, and sensible, but the feasibility of doing it with candidates who are likely to be anxious, or forgetful, or have memory issues makes it difficult and also in terms of practicality of implementing it into a test."* (DSA 1)

There also were concerns that candidates who are nervous or have learning difficulties, particularly dyslexia, may be disadvantaged in the following road signs task.

> *"I think that people with dyslexia might have trouble reading the signs if you tell them, say, 'follow the signs to Kettering' because they're trying to read it, bearing in mind that they have trouble reading it in the first place. They do eventually get it, but it might take longer, so it might increase the length of their training."* (ADI, Male with 2 years experience)

Some ADIs felt that non-English speaking candidates were likely to struggle with the task.

> *"Thought that it might be problematic with pupils for whom English wasn't their first language."* (ADI, Female with 2 years experience)

> *"From what I have seen I would have thought there could be a language barrier. All the candidates that I have are all English speaking, but I would think that if English is not your first language then you could find this difficult…I like the idea because it is true to life but my feeling is that some people could struggle with that no matter how much training they got."* (ADI, Male with 2.5 years experience)

ADIs were convinced that novel ways of teaching these tasks to people from non-English backgrounds would remedy any difficulties associated with language.

> *"I think that the only problem that could arise is the language barrier…we have a lot of people who speak Urdu…I try to use hand signals…things are interpreted in different ways…it shouldn't present a problem on the actual test, the approach taken in the lessons would need to be changed."* (ADI, Male with 6 years experience)

> *"By getting them to follow the road signs and probably stopping them and if English isn't their first language writing down the name of the place that I want them to follow the road sign to."* (ADI, Male with 2.5 years experience)

In contrast to the concerns raised by the ADIs, the DSA examiners considered the independent driving tasks as socially inclusive and did not think that candidates were disadvantaged due to their ethnic background, language difficulties or disabilities.

> *"I don't think that any of the ones that we've encountered have been due to problems with language or any form of disability (such as dyslexia, etc), it's all been down to the task that they've been asked to do. It's been a skills issue, they've got to check their mirrors, they've got to get in position, they've got to read the signs, it's putting the whole thing together. In my experience, it may be that you take a little bit more time briefing the person, it may be that you take a bit more time asking questions, but once you get going they (people from ethnic minorities, with dyslexia, etc) do complete what you want them to do."* (DSA 1, task of following verbal directions)

> *"No because when push comes to shove, even if we don't speak the language, we can pick up a sign, even if you were dyslexic or something, very often what we do is when they can't read the number plate, we ask them to write it down and they just follow the shapes. I really don't think that there's a major problem, and nobody's really struggled with it- even people with English as a third language."* (DSA 2, task of following directional signs)

A potential explanation for the difference in perceptions of the ADIs and DSA examiners is that examiners are primarily concerned with assessing candidates, while ADIs are concerned with training candidates. Training candidates with learning difficulties and language difficulties on these new tasks may be more difficult than assessing their performance on the tasks.

3.3 Situational judgement results

3.3.1 Are learner drivers able to provide good quality responses to situational judgement questions under test-like conditions?

If situational judgement testing is to be used in the practical driving test, it is important that learner drivers are able to give answers that are relevant, and of good enough quality to satisfy examiners that they are aware of the relevant hazards and risks in the situations being tested. In this section, the quality of answers (as rated by the DSA examiners from the transcripts) given to the two situational judgement questions was examined.

Summary

Are learner drivers able to provide good quality responses to situational judgement questions under test-like conditions?

- The quality of the answers given (as rated by two of the DSA examiners) is just above 'average' on the five-point scale used, and is significantly higher for the 'before' exercise. This is in line with expectation, as the 'before' exercise provides opportunity for the learner driver to observe the situation in full, rather than having to rely on memory after the event in the 'after' exercise.

3.3.1.1 Quality of answers

The answers given by learner drivers in the situational judgement exercises were scored for quality (out of 5, where 1=extremely poor and 5=extremely good) by two of the DSA examiners. The two examiners rated answers as higher in quality if they showed 'understanding of the exact situation and risks' rather than just a list of potential hazards 'generic' to the situations being tested. An example of 'generic' hazards would be anything related to roundabouts in general for the 'after the event' task, and anything related to bends in the road ahead with parked cars for the 'before the event' task (see Section 1.3 for a description of the situational judgement tasks).

Interestingly, the inter-rater reliability[16] between the two examiners was low to moderate at best (Spearmans r=0.59 and r=0.30 for the 'after' and 'before' exercises respectively). This suggests that the assessment of the quality of candidates' situational judgement responses is difficult without standardisation, since there is clearly an element of subjectivity in assessing the quality of a given answer.

An average of the DSA examiners' scores was taken as the measure of quality of answer for each learner driver. Table 3.9 shows the mean quality score for each of the two exercises. The means show that answers in general were just above average (2.5 out of 5).

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[16] Inter-rater reliability is the correlation in ratings between (in this case) two independent raters. A high correlation (typically r>0.8) implies that the raters are able to distinguish equally well between different levels of (in this case) quality of answer. Lower correlations imply that raters are not able to distinguish equally well and thus that they are probably using different criteria to make their ratings, or are using the same criteria with varying degrees of consistency.

Table 3.9: Mean quality scores for the 'before' and 'after' situational judgement answers.

'Before situation'	'After situation'
Mean (SD)	Mean (SD)
3.09	2.85
(0.76)	(0.79)

Quality scores for both the 'before' and 'after' exercises were not normally distributed so to test for the significance of the differences observed, a non-parametric Wilcoxon signed-ranks test was used, with 'exercise' as the independent variable, and mean ranking of quality score as the dependent variable. The test revealed that quality of the answers given to the 'before' situation' was marginally significantly higher than the 'after' situation ($Z=-1.885$, $p=0.059$).

This finding is in line with expectation, since in the 'before' exercise learners were able to observe the situation in front of them, while in the 'after' exercise they were forced to rely on their memory of what had happened[17]. Helman (2008) discusses the difficulties in testing for 'awareness' of complex tasks after the event.

3.3.2 How relevant to 'real driving' are the situational judgement exercises seen to be?

In this section, we discuss learner drivers', ADIs' and DSA examiners' opinions on the relevance of the situational judgement exercises to 'real driving'.

Summary

How 'relevant to real driving' are the situational judgement exercises seen to be?

- The situational judgement tasks were not considered relevant to real driving because of the artificial situation of stopping candidates to assess their hazard awareness skills.

3.3.2.1 How do learner drivers' ratings of relevance to 'real driving' differ between the situational judgement exercises?

Table 3.10 shows the mean ratings for the questions relating to relevance to 'real driving' questions for the situation judgement exercises. The data appear to show that both exercises were given very similar ratings, with the exception that the 'before' situation rating for 'helped understand hazards' was higher than the 'after' situation rating.

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[17] The finding is also to be treated with caution, since the two situations are not the same, and it is possible that there are subtle differences in the criteria used by the DSA examiners when rating quality for the two tasks.

Table 3.10: Mean ratings of hazard awareness and relevance to real driving for the two situational judgement tasks.

	Question after a situation	Question before a situation
	Mean (SD)	Mean (SD)
Exercise helped me understand risks and hazards	3.71	4.08
	(0.83)	(0.65)
Exercise should be part of the driving test in the future	3.67	3.72
	(0.88)	(0.88)
Exercise prepares learners for real driving after test	3.65	3.66
	(0.83)	(0.79)

Scores for both the 'before' and 'after' exercises were not normally distributed so to test for the significance of the differences observed, three non-parametric Wilcoxon signed-ranks tests were used, with 'exercise' as the independent variable, and mean ratings as the dependent variables. The tests revealed that the mean rating for 'helps understand risks and hazards' was significantly higher for the 'before' exercise ($Z=-3.456$, $p=0.001$), while the exercises did not differ on the other ratings.

The finding is in line with expectation; when learners are able to observe a situation before they drive through it, this will enable them to mentally prepare and anticipate possible risks and hazards and subsequently look out for them as they drive through the situation. The retrospective nature of the 'after' exercise does not allow this.

3.3.2.2   *Qualitative data from learner drivers*

There was a split in opinions on the relevance of the situational judgement driving tasks to 'real driving'. This is illustrated below.

Relevant to 'real driving'

Some candidates suggested that the situational judgement exercises were relevant to 'real driving', because they gave them an opportunity to reflect on their driving and appreciate the complexity of real life driving. The tasks were seen as allowing learner drivers to perceive, understand and reflect on the risks of the road.

> *"It's good to think of what you've done. It's taught me to think about my actions and mistakes after I've done something, asking myself was that good or was that bad."* (Male, 18 years, describing the hazards before the event)

> *"(It taught me) just about all the things that you do have to think about, you don't realise all the things that you do look at while you're driving and that you have to watch and be aware of."* (Female, 18 years, describing the hazards after the event)

Not relevant to real driving

Some candidates struggled to view the situational judgement tasks as relevant to real driving, and felt that describing hazards and risks after the event was difficult as they would no longer be able to access the information from memory

> *"I don't think it's relevant, I think its more common knowledge. You get on with it as you are doing it and don't think about it afterwards."* (Male, 20 years, describing a situation after the event)

"At the time, obviously there were hazards that I was looking for, but afterwards, I couldn't really say them. I don't think that it's relevant because you don't really need to think about what you've done. I don't think that you need to pull up and stop and ask what just happened at that roundabout because its in the past, you've got to concentrate on what you're doing next." (Female, 18 years, describing a situation after the event)

Candidates also commented that it was unrealistic to stop to spot hazards and that in real driving drivers assessed the risks and hazards continuously while driving.

"The fact you are stationary makes it unrealistic." (Female, 18 years, describing a situation before the event)

"Because in real driving, you don't pull up and think about what the hazards are." (Male, 21 years, describing a situation before the event)

Candidates felt that instructors and examiners should be able assess their ability to recognise hazards based on their driving rather than based on specific manoeuvres.

"I kind of don't see the point of this one as much, because you should be doing this all the time. I didn't see the point of stopping me in one place and asking questions on one situation, I think that should be continually monitored." (Female, 27 years, describing a situation after the event)

"It's less relevant because you are stationary, it would be more relevant if you could do it while you were driving along. From day one you are taught to assess the situation that you are in. It's not dynamic enough; you are going to get text book answers." (Male, 25 years, describing a situation before the event)

3.3.2.3   How do ADI ratings of relevance to real driving differ between the situational judgement exercises?

Table 3.11 shows the mean relevance to 'real driving' ratings for the two exercises. In all cases, the data show that the 'before' event received higher ratings than the 'after' event.

Since the data were not normally distributed, in each case a non-parametric Friedman's test was used to test for the statistical significance of the observed differences. 'Exercise' was used as the independent variable, and mean ranking of 'relevance' as the dependent variable.

Table 3.11: Mean relevance to 'real driving' ratings for the two situational judgement exercises—ADIs.

	Describe a situation after the event	Describe a situation before the event
	Mean (SD)	Mean (SD)
Exercise felt like real driving	3.44	4.22
	(1.01)	(0.68)
Exercise should be part of the driving test in the future	3.11	3.67
	(1.36)	(1.12)
Exercise prepares learners for real driving after test	3.00	3.89
	(1.32)	(0.93)

For 'felt like real driving', a Wilcoxon signed-ranks test revealed that ratings were significantly higher in the 'before' exercise than in the 'after' exercise (Z=-2.33, p=0.02).

For 'should be part of the driving test in the future', a Wilcoxon signed-ranks test revealed that ratings were marginally significantly higher in the 'before' exercise than in the 'after' exercise (Z=-1.89, p=0.059).

For 'will help prepare for real driving', a Wilcoxon signed-ranks test revealed that ratings were significantly higher in the 'before' exercise than in the 'after' exercise (Z=-2.07, p=0.038).

Overall, the analysis of ADI ratings of 'relevance to real driving' in the questionnaire suggest that the 'before' situational judgement exercise was seen as more relevant to real driving after the test than was the 'after' exercise. The ADI findings contrast with relevance findings from learner drivers (there were no differences in ratings of relevance between the two tasks by learner drivers), but are in agreement with the fact that learner drivers seemed to prefer the 'before' task because of its benefit for hazard awareness in the subsequent driving situation.

3.3.2.4   Qualitative data from ADIs and DSA examiners

The views of ADIs and DSA examiners were also divided on the relevance of the situational judgement exercises to 'real driving'. This is outlined below.

Relevant to 'real driving'

Some ADIs felt that the current driving training and assessment protocol relied too much on instructors and examiners. The instructors thought that the situational judgement questions required candidates to think and that they would therefore be relevant to later solo driving. The situational judgement tasks were perceived to give instructors and examiners an insight to candidates' understanding of hazards and the mental decision-making process of the candidate.

> *"At the moment, we're actually preparing people for a test, rather than giving them driving skills you need for life…to try and put that in to the curriculum would be good because we would have to sit and talk about it, and they'd have to think about it on a regular basis and it would start them thinking. I feel like most instructors are actually teaching to get somebody through a test."* (ADI, Male with 2.5 years experience, describing a situation after the event)

> *"It's going to stand them in good stead when they pass their test- we've got to get them to think for themselves, and the sooner we as instructors do that, the better. I think that would probably give the examiner an insight into what the pupils are thinking about."* (ADI, Male with 1.5 years experience, describing a situation before the event)

None of the DSA examiners suggested that the situational judgement tasks were relevant to real driving or prepared learner drivers for solo driving.

Not relevant to real driving

Many ADIs and the DSA examiners considered the situational judgement questions a distraction from the real task of assessing a candidate to drive and felt that there was a discrepancy between what candidates reported and how they drove.

> *"I think it's to a degree, pointless, because what we found is that quite a lot of people don't identify real, key potential hazards, what some people were doing was just reciting what they did in their theory test, but not really actually understanding and that's been demonstrated by people saying 'yes, I looked to the right for cars coming', yet they continued to pull out in front of these cars. So, it's almost like they're thinking 'I know what I've got to*

say' but they're not demonstrating their understanding." (DSA 1, describing a situation after the event)

The tasks were considered irrelevant to 'real driving' because of the artificial situation of stopping candidates to assess them. ADIs and the DSA examiners pointed out that during normal driving decision-making and hazard assessment were carried out continuously during the drive. Stopping candidates to assess their understanding on the task was regarded as impractical and unrealistic.

> *"I don't agree with it. I think that all you are doing is pulling a pupil up and saying to them 'what hazards they expect to see here' and give them a couple of minutes to think about it before they drive through. The reality of life is that when you are out on the road you don't do that. You don't say there are loads of parked cars let me think about that for a second, so that I don't feel is true to life."* (ADI, Male, 3 years experience, describing the situation after the event)

> *"The other thing is you are asking someone to sit at the side of the road and identify potential problems, when as a driver they have to make decisions when they are travelling at speed so they haven't got time to sit and think and judge. They have got to make decision quickly when they are moving so I think it's a bit unrealistic to a degree."* (DSA 2, describing the hazards before the event)

In addition, ADIs and the DSA examiners felt that the inclusion of the situational judgement questions had a detrimental effect on the overall driving performance on the trial drives. Candidates were not given feedback on their responses on the situational judgement questions and ADIs believed that candidates may focus on their perceived 'inadequate' responses:

> *"This has an impact on later driving in the test. Students fixate on what they haven't said."* (ADI, Male with 6 years experience, describing the hazards after the event)

> *"Also I think that a lot of people are concerned, once they've driven off again, they've commented that they've spent the next five or so minutes worrying about the answer they gave and their driving over the subsequent five minutes has deteriorated because they can't let go of that."* (DSA 1, describing the hazards after the event)

ADIs felt that the task of describing the hazards before the situation may have also had an impact on driving safety. Candidates often noted the hazards, but drove along without being mindful of the hazards.

> *"I can see what the DSA are trying to get at, the only problem with it is that if you pull someone up on the side of the road and ask them to tell you what they see ahead and what hazards they should be looking out for, they then, because they've said it all, they drive down the road, not thinking."* (ADI, Male with 3 years experience, describing the hazards before the event)

Particularly relevant to the situational judgement question after the event, ADIs felt that this task was irrelevant to real driving because candidates were unable to retain the information.

> *"I don't think there is a lot of benefit. They won't remember precisely what's happened. You are asking them to recall information that they have disposed of and discarded."* (ADI, Female with 2 years experience)

> *"This is the one that I am least enthusiastic about. The overall benefit is clearly to teach them to plan, to read, to anticipate, being aware of potential hazards. But that is already part of the training. My initial view is that after you have dealt with the situation it has no importance because you are onto the next situation. It is often the case in lessons where I will ask them to*

recall an instance and they can't remember because it's over and done with."
(ADI, Male with 12 years experience)

Many ADIs and the DSA examiners believed that the learner drivers' performance on the situational judgement tasks was inadequate and candidates often were unable to understand the relevance of these tasks, particularly with regard to describing the risks and hazards after the event

> *"Most of my pupils just didn't get it. They had to think really, really, really hard- they were pretty nonplussed about that and one or two of them said 'oh, I didn't really get that' and I tried to explain to them why you do it. Maybe they had problems with the definition of hazards."* (ADI, Male with 3 years experience)

> *"A lot of them seemed to be searching for what they thought we were looking for rather than giving a genuine answer. We were asking about the risks and dangers involved they thought about on the roundabout and we got all sorts of answers. We got some very shallow answers and some very comprehensive answers."* (DSA 2)

3.3.3 What are the perceived advantages and benefits of the situational judgement exercises?

In addition to the perceived relevance of situational judgement exercises to 'real driving', we explored learners' ADIs and DSA examiners' views of how the exercises benefited the learner drivers. The findings are reported in the following section.

Summary

What are the perceived advantages and benefits of the situational judgement exercises?

- Some ADIs and learners think that the situational judgement tasks encourage learner drivers to plan ahead and be aware of hazards and risks on the road. Describing hazards and risks before the situation was considered more useful that describing the situation afterwards.

- DSA examiners did not perceive any benefits of the situational judgement tasks for the learner drivers.

3.3.3.1   Qualitative data from learner drivers

Some learners felt there were some perceived advantages of the situational judgment exercises, as outlined below.

<u>Increases awareness of hazards</u>

The situational judgement tasks were perceived to benefit the learner drivers as they helped to increase anticipation skills and encouraged participants to consider the risks on the road.

> *"I would go along with that. It makes you take into consideration the hazards you might face. That's what you would have to think if you were approaching that situation. Obviously, for experienced drivers its second nature but for new drivers they would need to take more consideration. Taught me that next time I come to a junction I need to think ahead and look out for hazards."* (Male, 25 years, describing the hazards before the event)

> *"Thinking about the risks and hazards after the event was difficult. I think it would be good (to be part of the test). People would be more aware of the risks and hazards of different situations that they were coming across. When you are driving, you are caught in the moment of paying attention to the driving and not*

really thinking that you will be asked later about what the risks are." (Female, 22 years, describing the hazards after the event)

Awareness of other road users

Slightly more specifically, some learners thought that the situational judgement tasks encouraged candidates to consider other road users.

"I think it would be good, and makes you aware of other people. It's not only you that's driving, but there are other people around…it makes you think about what you're doing." (Male, 17 years, describing the hazards before the event)

3.3.3.2 Qualitative data from ADIs and DSA examiners

Compared with the independent driving tasks, ADIs felt that the situational judgement tasks had fewer benefits and advantages for learner drivers. Only a few ADI suggested that the situational judgement tasks had the potential to increase learner drivers' awareness of the risk and hazards on the road.

"To make them much more aware of the hazards and the situations that they're likely to come across in everyday driving." (ADI, Male with 6 years experience, describing the hazards before the event)

"Yet again it's looking forward and to what is going to happen. They should already be keyed into this anyway. It would improve awareness of what is going to happen." (ADI, Male with 12 years experience, describing the hazards before the event)

The task of describing the hazards before encountering the situation was perceived as helping candidates to plan ahead:

"Whereas when you are thinking beforehand … it teaches them to forward plan, which when you are driving is what you are doing anyway. With experienced drivers you are always thinking about what is going to happen next and how we are going to deal with it. I think it helps them to forward plan rather than learn from their mistakes." (ADI, Male with 3 years experience, describing the hazards before the event)

"It's a good one because you are looking ahead as opposed to thinking about a situation after you have done it. You think about what you are going to do before you do it and it will have a beneficial effect on driving." (ADI, Female with 2 years experience, describing the hazards before the event)

None of the DSA examiners felt that there were any perceived advantages or benefits of including the situational judgement tasks in the practical driving test.

3.3.4 What are the perceived difficulties and challenges associated with the situational judgement exercises, including practical implications for training and examining?

Learners', ADIs' and DSA examiners' perceived challenges associated with the situational judgement exercises are addressed in this section.

Summary

What are the perceived difficulties and challenges associated with the situational judgement exercises, including practical implications for training and examining?

- Learner drivers, ADIs and DSA examiners suggested that the situational judgement tasks had a detrimental effect on overall driving performance, were prone to be biased by pre-learned responses and had the potential to contribute to test anxiety.

- The general consensus among learner drivers, ADIs and DSA examiners was that it was not practical or useful to include the situational judgement tasks in the practical driving test, partly because their contents were already covered in the Theory Test (Hazard Perception test). However, the exercises were perceived to be useful to teach new drivers about hazards on the road and were thus recommended to be part of driver training.

3.3.4.1 Qualitative data from learner drivers

A number of disadvantages of the situational judgement exercises were suggested by learner drivers; these covered the two aspects described below.

Implications for assessing learner drivers:

Repetition of Hazard Perception Test:

Many learner drivers thought that the situational judgement tasks repeated the hazard perception element of the Theory Test.

> *"I'm not too sure on this one, I think it's sort of gone through in the hazard perception, when you do the theory and it's kind of just explaining everyday stuff."* (Female, 17 years, describe hazard after the event)

> *"I think it'd be pretty pointless because I've done all that in my theory test, so I know where hazards are and stuff like that. I do think it's relevant, but because you do your theory and HP test, you wouldn't be putting in for your test if you weren't aware of all that already…I think that was a bit time-wasting."* (Female, 29 years, describe hazard before the event)

Increases anxiety:

Candidates suggested that the situational judgement tasks contribute to test anxiety and had a negative impact on their performance during the practice trial.

> *"I hadn't done it before, so I was a bit worried that I missed something and was dwelling on it going into the next section."* (Female, 18 years, describing hazard after the event)

3.3.4.2 Qualitative data from ADIs and DSA examiners

The following themes emerged from ADIs and DSA examiners when discussing potential difficulties associated with the situational judgement exercises, as described below.

<u>Implications for training learner drivers:</u>

Many ADIs and DSA examiners believed that the situational judgement tasks did not add value to the practical driving test. However, these tasks could be useful during lessons with new drivers and should thus be considered for driver training as it allowed instructors to assess the learner drivers' understanding of hazards and risks on the roads.

> *"I don't think that this exercise is necessary to be put into a driving test. I don't think that it would put them at any sort of advantage. However, I do think it's an excellent exercise for teaching pupils in their lessons."* (ADI 6, A4)

> *"It's beneficial if it's incorporated in training as it encourages them to think a little bit more. But I'm not sure if we can test people on that. Not sure how we could mark it. We are more concerned with how they did it rather than how they (candidate) thought they had done it."* (DSA 3, A2)

The use of a line of questioning similar to that used in the situational judgement tasks was seen as being beneficial for new drivers. In training, the situational judgement tasks were useful to allow instructors to recognise learner drivers' understanding of hazards and risks on the road.

> *"People starting off have a tunnel-vision approach to driving, but I think that listening and seeing what they're picking up would be really useful."* (ADI 10, A2)

<u>Implications for assessment:</u>

Repetition of Hazard Perception Test:

A large proportion of the driving instructors and the DSA observers considered that the inclusion of the situational judgment questions would be a repetition of what had already been assessed in the hazard perception component of the theory test. There was no perceived added value of including these new questions in the practical driver test, especially since both ADIs and examiners felt they were able to make adequate assessment regarding learner drivers' perception and awareness of the hazards and risks on the road based on their driving.

> *"I think it's already tested with the hazard perception and I think certainly as a driving instructor I can always see when a pupil is aware of their surroundings, and I would have thought that with the training examiners have had, they would be able to pick up the fact that a pupil has realised the fact that a car is going to pull out the side road so I believe it's already been done and been done in a truer style."* (ADI, Male with 2.5 years experience, describe hazard after the event)

> *"They're under pressure, have they got to identify all the things that we're identifying, so they're worrying and their driving deteriorates. We can see by the way that they drive whether they're considering hazards. I think it's pointless, what we want to see is people actually driving the car and demonstrating that they understand the stuff they've learnt in their theory and hazard perception, and we can see that in their driving."* (DSA 1, describe hazard before the event)

Deterioration of driving skill:

The DSA examiners also suggested that the alternative of commentary driving was not feasible or relevant to implement in the current driver training.

> *"In my experience of working here and training staff, whenever anyone tries to do commentary drives, their driving deteriorates because they're talking about what they're seeing- so they tend to reduce their speed. I don't really*

think that commentary is a viable option, it's also difficult for people who don't have a firm grasp on English." (DSA 1, describe hazard after the event)

Pre-learned, desirable responses:

A perceived problem with the situational judgement tasks was that instructors may coach learner drivers to give desirable responses to the questions. Therefore, this task would not be assessing understanding of the hazards and risks of road situations.

> *"I don't think there are any benefits. You would get a lot of kids who would blag their way through it without fully understanding what went wrong."* (ADI, Male with 6 years experience, describe hazard after the event)

> *"You could have scripts. People are going to learn this by rote instead of by understanding."* (DSA 2, describe hazard before the event)

Increases test anxiety:

A few ADIs and the DSA examiners felt that the inclusion of the situational judgement questions may contribute to learner drivers' anxiety during the driving test.

> *"I can imagine there will be some students that will be feel a bit more self conscious about having to explain especially on the driving test if they are stressed."* (ADI, Female with 2 years experience, describe hazard after the event 2)

> *"I think it's hard to remember things, especially if the situation has passed and on test, when one is nervous it's harder. One my students said that her mind went blank, she had no idea what was expected and her answer was a bit vague."* (ADI, Male with 1 year experience, describe hazard after the event)

3.3.5 Which characteristics of drivers impact on quality of answers and perception of the situational judgement exercises?

As well as examining the way in which the whole sample of learner drivers dealt with the situational judgement exercises, it needs to be established whether there are particular characteristics of learner drivers that impact their performance on the tasks. In this section, we discuss analyses that explored the links between the quality of answers given to the situational judgement questions and the characteristics of age, gender, ethnicity, and personality ('the Big Five' as measured by the Ten Item Personality Inventory—Gosling et al., 2003). We also examined whether amount of previous formal training or informal practice is related to performance.

Summary

Which characteristics of drivers impact on quality of answers and perception of the situational judgement exercises?

- None of the following characteristics of learner drivers were found to be associated with the quality of answers given to either of the situational judgement exercises: age, gender or ethnicity. Some minor associations were found with personality variables indicating that extraverts and less 'agreeable' people tend to produce better situational judgement responses after completing the manoeuvre. While we can conclude that the situational judgement exercises were 'fair' on most of the personal characteristics and on prior experience and practice, further work may be required to assess the personality correlates of quality of answer.

- There was also no association between quality of answers and the amount of formal training or informal practice received by learner drivers. This suggests that at present, nothing in learners' formal tuition or in their informal practice prepares them for the situational judgement exercises trialled.

- Due to the low numbers of participants with language or learning difficulties in the sample, it is not possible to conclude with any confidence what their impact on performance in the exercises is likely to be. Further work on language and learning difficulties will be needed to establish if and how such individuals will need to be supported.

3.3.5.1   Effect of driver characteristics on quality of answers

Non-parametric Mann Whitney tests revealed that there were no significant gender differences with regard to the quality of situational judgement question responses. Furthermore, no significant differences with regards to the quality of response were found between ethnic majority and ethnic minority groups.

Correlational analyses were conducted to assess whether there were any significant relationships between the quality of situational judgement responses and age, personality variables, formal driving instruction, and informal driving practice. The findings suggest that candidates who considered themselves to be extraverted and lower on the 'agreeableness' construct[18] were more likely to give better quality responses to the 'after' situational judgement exercise ($r=0.24$, $p<0.05$; $r=-0.31$, $p<0.01$ respectively). No other correlations were significant.

The fact that extraverted learner drivers gave better answers to the 'after' situational judgement questions makes some theoretical sense, in that these individuals would be expected to be more talkative, and willing to offer suggestions from memory for the things they considered when in the situation. However, it is puzzling that the same individuals did not offer better answers in the 'before' situation also.

On the whole, these analyses suggest that the situational judgement exercises were not 'unfair' to any specific type of candidate. The findings also do not show any influence of prior tuition and practice on performance in the tasks. This suggests that neither formal tuition nor private practice currently contains elements to help learners prepare for situational judgement tasks.

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[18] An example of an item that would be rated highly by someone who was high on agreeableness is "I am sympathetic, warm"

3.3.5.2   Qualitative data from learner drivers

Candidates who did not speak English as their first language perceived this task as difficult.

> *"I don't like it because I need to talk. Because English is not my first language, so it's difficult for me to explain."* (Female, 26 year old, belonging to an ethnic minority)

3.3.5.3   Qualitative data from ADIs and DSA examiners

Compared with of the findings from the independent driving tasks, more ADIs and the DSA examiners felt that specific candidates may be disadvantaged in their performance on the situational judgement tasks. Shy candidates were perceived to be at risk of finding the situational judgement tasks intimidating due to difficulties in articulating their responses:

> *"People who are very shy would struggle with this task. I have one student who's been with me 2.5 years, and whenever I try to get her to do any exercise which involves her talking, I cannot get her to open her mouth. If this exercise was put in, I don't think that she'd ever get through her test."* (ADI, Male, 10 years experience)

> *You are going into their personalities now. Some people seem to feel a lot more comfortable with verbalising what they have done and having conversations with strangers and some aren't. You are going to have language barriers. I think speaking to the examiner when they are already stressed is going to be a big problem.* (DSA 2)

Candidates who did not have English as their first language were also perceived as being at risk of finding this task challenging:

> *"Yes, there was a chap from Sri Lanka who really struggled with it; he said that he got quite nervous and that he found the roundabout situation very difficult."* (ADI, Female with 2.5 years experience)

> *"Language! If an examiner is asking them to describe any hazards and they can't speak English, they'd need a translator, and how do you know that it's their view and not that of the translator."* (ADI, Male with 3 years experience)

4 General discussion and conclusions

This study presents the findings from a feasibility study of three independent driving exercises and two situational judgement exercises that the Driving Standards Agency (DSA) are trialling for possible inclusion in GB's driving test in the future.

Data for this feasibility study were collected from 'test-ready' learner drivers who took part in a 'driving event' carried out under mock test conditions at a pre-determined route near the DSA training centre in Cardington. The exercises included the following:

Independent driving components:

1. **Following verbal directions**: Learners were given a short number of directions to follow as if from someone they had stopped and asked. They then followed these directions from memory while driving.

2. **Turn the vehicle in the road**: Learners were asked to imagine that they realised they were going the wrong way, and to turn the car around in the road using a method of their choice.

3. **Following road signs**: Learners were asked to follow road signs to 'Kempston' for a period of time.

Situational judgement elements:

4. **Situation judgement questions before a situation**: When pulled up at the side of the road before a bend in the residential road ahead (with many parked cars and side-entrances), learners were asked to list the risks and hazards they would consider before driving through the situation.

5. **Situational judgement questions after a situation**: Learners were asked to describe the hazards and risks they had considered when negotiating a roundabout, after they had pulled up on the side of the road having negotiated the roundabout.

Performance data from the drive itself were supplemented with quantitative and qualitative data from a post-drive questionnaire and short interview with learner drivers. Similar questionnaire and interview data were also collected from the Approved Driving Instructors (ADIs) who supplied candidates for the driving events and from three of the DSA examiners who served as 'mock' examiners on the driving event.

The following summary findings combine performance data with interview responses from learner drivers, ADIs and DSA examiners to comprehensively consider the feasibility of including independent driving and situational judgement tasks into GB's training and testing regime in future. Recommendations for steps towards this process are set out.

4.1 Summary of main findings—independent driving

The main findings from the study for the independent driving exercises and their implications for future development can be summarised as follows:

> *Learner drivers found the independent driving exercises (in particular the 'following road signs' exercise) challenging, and changes to the training received by learner drivers are recommended before any of the independent driving exercises are introduced into GB's driving test.*

- Learner drivers committed five times as many major errors ('serious/dangerous faults' as scored on the DL25 forms) per minute of exposure during the 'following road signs' exercise as they did during 'normal driving'. This difference remained even when only those 28 drivers

who would have passed the current driving test based on their 'normal' driving performance were included in the sample.

- Error rates in the other two independent driving exercises were the same as during normal driving, apart from the fact that in the 'following verbal directions' exercise learners made significantly fewer major errors compared to normal driving, but significantly more minor errors. It is possible that the decreased major errors in the following verbal directions task are a result of the exercise enabling better forward planning by learner drivers, and that the exercise does not require true multi-tasking.

- The subjective ratings of workload back up the error analyses. Ratings for 'following road signs' were highest (significantly), showing that learners found this task the most effortful, mentally demanding, and frustrating.

- The findings have considerable practical implications: we examined how many drivers who would have passed the current driving test based on their 'normal' driving performance would have failed based on the number of major errors made in one of the independent driving exercises. This analysis showed that of the 28 'passers', the numbers who committed at least one major error in the 'following road signs', 'following verbal directions', and 'turn vehicle in the road' exercises were 16, 2 and 4 respectively.

- When these numbers are related to the pass-rates in GB's practical driving test, they suggest that the current pass-rate would drop from 42% to 18% if the 'following road signs' exercise were introduced without any changes to training, and to 39% and 36% with the similar introduction of the 'follow verbal directions' and 'turn the car in the road' exercises. The introduction of all three exercises without changes to the content of current driver training would lead to a pass-rate of 13% for the driving test. Note that this analysis is based solely on the committing of additional major errors (not minor errors), and thus probably slightly underestimates the effect of introducing the exercises on pass-rates.

- Overall, the error and workload findings are compatible with the assumption that 'test-ready' learner drivers in GB currently struggle with 'real driving' tasks that introduce high workload or distract attention from the basic controls of the car. This general assumption is compatible with a wide range of evidence in the literature suggesting that distraction and high workload introduced by various activities (e.g. speaking on a mobile phone) when driving can lead to decrements in driving performance (e.g. Kass, Cole and Stanny, 2007; Lee, Lee and Boyle, 2007; Klauer, Dingus, Neale, Sudweeks, and Ramsey, 2006; Burns, Parkes, Burton, Smith and Burch, 2002; McKenna and Farrand, 1999). Further work is required to establish whether the underlying cause of performance decrements is workload and/or distraction.

- Given the problems learner drivers had with the following road signs exercise, it is worth considering what other 'real driving' tasks (for example, using navigation equipment) may result in similar increased workload and distraction effects, so that training can be developed to equip learner drivers to deal with these effects. Such training may not only be practical in nature, but may be based on increasing learner drivers' awareness of such issues in classroom teaching or discussion-based modules.

- There are some limitations of the current study that restrict the degree to which the performance findings can be generalised. Firstly the independent driving exercises are confounded with road section, meaning that performance differences may have been due to road section rather than task difficulty. Secondly there are insufficient data from minority groups to ascertain how the new exercises would impact specifically on the performance of these groups. Further trialling should seek to alleviate these limitations.

> ***Despite the objective difficulty of the independent driving exercises (as reflected in the number of errors), they are perceived as relevant to 'real driving' by learner drivers, ADIs and DSA examiners. Perceived benefits include greater autonomy in decision making, giving a flavour of and preparing for later solo driving. Thus if introduced after suitable evolution of driver training in GB, acceptance is likely to be high.***

- Learner drivers, ADIs and DSA examiners suggested that the current driving test focused too much on vehicle control skills (Level 1 & 2 of the GDE matrix). The current test was perceived as insufficient to prepare candidates for the challenges of 'real driving' and learner drivers were seen as using the instructions from examiners as 'cues' to conduct the mirror-signal-manoeuvre (M-S-M) or the mirror-signal-position-speed-manoeuvre routines. Without the 'cues' from their instructors and examiners in the independent driving exercises, learner drivers were reported to lose some of their basic vehicle control skills. Therefore, introduction of these new elements to driver training and testing was regarded as imperative to ensure that candidates' core driving competencies were sufficiently developed and automatic to function properly in situations where the driver's attention is focused on other goals such as following road signs.

- Learner drivers, ADIs and DSA examiners perceived the independent driving exercises as relevant to 'real driving' as they prepare learner drivers for the challenges of solo driving. Following verbal directions and following direction signs were considered useful as they encourage learner drivers to plan their route, be aware of the road conditions and make decisions independently.

- Learner drivers, ADIs and DSA examiners suggested that independent driving tasks had the potential to benefit learner drivers in their transition from being an accompanied learner driver to being a solo driver, as they encouraged them to exercise their independence, autonomy and choice. In the mock test environment, the trialled elements removed external cues from examiners and instructors and allowed the assessment of their ability to drive safely without such cues. Learners, ADIs and DSA examiners also suggested that the independent driving exercises, if introduced into training and testing appropriately, could give candidates the opportunity to consolidate the skills acquired in their driver training and to be responsible for their own safety.

- Learner drivers suggested that the new exercises addressed the social aspects of driving, facilitating their awareness of the road and raising awareness for one's responsibility as a solo driver. It was felt that incorporating the new independent driving tasks in the driver training and testing would teach candidates goals and context of driving (Level 3 of the GDE matrix) and further gain appreciation for the goals for life and skills for driving (Level 4 of GDE matrix).

- Despite the perceived difficulty of the independent driving tasks, learner drivers were positive about incorporating these new tasks in the driver training and assessment protocol. Reported challenges included the difficulty to remember verbal directions, to make independent decisions, and to multi-task (driving and following directional signs simultaneously). However, candidates felt that with adequate training they would find these tasks easier.

> *Reported practical barriers to introducing the independent driving exercises in training and testing included the need for additional training time dedicated to the new elements, a danger of reducing the manoeuvring repertoire of learners, memory dependence of the 'following verbal directions' task and difficulties for non-native speakers and learners with learning difficulties, particularly on the 'following verbal directions' task.*

- There are implications for training and testing such as the need for additional training time to incorporate the exercises; and the potential loss of manoeuvring skills by favouring a particular manoeuvre (e.g. three-point turn) when performing the 'turn the vehicle' task at the expense of other manoeuvres that may be needed in 'real driving' (e.g. reverse around a corner).

- ADIs expressed concerns with the independent driving exercise of following verbal directions suggesting that it was memory dependent and that nervous and anxious candidates would struggle with this task under test conditions. Learner drivers felt that the exercises (in particular the 'following road signs' exercise) negatively affected their driving performance.

- The majority of the participants and ADIs perceived the independent driving exercises to be socially inclusive (i.e. individuals were unlikely to be disadvantaged due to their disability or ethnicity). However, learner drivers who considered themselves dyslexic (n=2) reported that they found the independent driving exercises challenging (especially 'following road signs' and 'following verbal directions'). ADIs suggested that training people with learning disabilities and those with language difficulties in the independent driving exercises would be challenging.

> *The independent driving exercises seem to be 'fair' in that they do not appear to disadvantage people on the basis of age, gender, ethnicity, or personality. HOWEVER, more work is needed to understand the potential effects of language or learning difficulties on performance in the independent driving exercises.*

- None of the following characteristics of learner drivers were found to be associated with error rates, in any of the independent driving exercises: age; gender; personality variables; ethnicity. Thus we can conclude that the independent driving exercises were 'fair'—the difficulty associated with the exercises was not confined to specific 'types' of people.

- There was also no association between error rates and the amount of formal training or informal practice received by learner drivers. This suggests that at present, neither formal training under the supervision of an Approved Driving Instructor nor informal practice received from friends and family prepares current learner drivers for the requirements of the independent driving exercises used in this trial.

- Age, gender, ethnicity, amount of previous formal instruction, and previous practice also showed no significant association with ratings of workload, suggesting that these variables have no influence on the effort required by the tasks.

- Due to the low numbers of participants with language difficulties or learning disabilities in the study sample, it is not possible to conclude with any confidence what the likely impact of these factors on performance in the exercises is. Further work will be needed to establish if and how such individuals will need to be supported.

4.2   Summary of main findings—situational judgement

The main findings from the study for the situational judgement exercises and their implications for future development can be summarised as follows:

> *Learners can give appropriate answers to the situational judgement exercises when stopped at the roadside.*

- The quality of the answers given (as rated by two of the DSA examiners) is just above 'average' on the five-point scale (where 1=extremely poor and 5=extremely good) used, and is significantly higher for the 'before' exercise. This is to be expected, as the 'before' exercise provides opportunity for the learner driver to observe the situation in full, rather than having to rely on memory after the event.

> *Overall, the situational judgement exercises are not perceived as being very relevant to 'real driving'.*
>
> *Although there are some perceived benefits, such as helping learners to plan ahead and to identify risks, they are outweighed by the perceived disadvantages of repeating content already covered more effectively elsewhere (the more advanced video-based hazard perception testing in the theory test, which has been shown to reduce accident risk), impairing learners' performance, and being susceptible to bias by pre-learned answers and increasing test anxiety. Most ADIs felt, however, that situational judgement exercises should form part of training.*

- The situational judgement tasks were not considered relevant to 'real driving' because of the artificial situation of stopping participants to assess their hazard awareness skills.

- However, the situational judgement tasks were seen by learners and ADIs as encouraging learner drivers to plan ahead and be aware of hazards and risks on the road. In general, describing hazards and risks before the situation was considered more useful that describing the situation afterwards.

- Learner drivers, ADIs and DSA examiners suggested that the situational judgement tasks had a detrimental effect on driving performance due to learners dwelling on their answers to these tasks when driving on after the exercise. It was also felt that these tasks had the potential to contribute to test anxiety.

- The general consensus among learner drivers, ADIs and DSA examiners was that it was not practical or useful to include the situational judgement tasks in the practical driving test—not least because they will be difficult to assess objectively given the lack of standardisation of situations. However, these exercises were useful to encourage new drivers to consider hazards on the road and should be part of driver training.

> *The situational judgement exercises seem to be 'fair' in that they do not appear to disadvantage people on the basis of age, gender, and ethnicity. However, some effects were found for personality; more work is needed to elucidate the personality findings. More work is also needed to understand their potential effects on those learner drivers with language or learning difficulties.*

- None of the following characteristics of learner drivers were found to be associated with the quality of answers given to either of the situational judgement exercises: age, gender or ethnicity. Thus we can conclude that the independent driving exercises were 'fair'—the difficulty associated with the exercises was not confined to specific 'types' of people in terms of these variables. However, people who were more extraverted and less agreeable did give better answers to the 'after' exercise.

- Due to the low numbers of participants with language difficulties or learning difficulties, it is not possible to assess with any confidence the impact of these factors on performance in the exercises. Further work on these aspects will be needed to establish if and how such individuals will need to be supported.

5   Recommendations

The following recommendations are made regarding next steps for evaluating the feasibility of introducing independent driving and situational judgement testing in the practical driving test.

Recommendations relating to independent driving:

- The current study has identified independent driving tasks as promising candidates for inclusion in future driver training and testing. On the basis of the findings on independent driving exercises, we recommend that considerable research effort should be directed at understanding what needs to change in the training of learner drivers so that they can be equipped with the skills to perform workload- and distraction-inducing tasks such as the independent driving exercises trialled here. The tasks have high acceptance from learners and from ADIs which should facilitate their introduction into the current training and testing regime. Changes may include longer training times with specific exercises in multi-tasking, and ensuring changes in the mindsets of the ADIs and learner drivers, where learner drivers are given more free reign and more responsibilities while under instruction.

- The magnitude of the performance decrement experienced in the 'following road signs' exercise was considerable, and the findings suggests that this was due to the workload associated with this exercise. It is likely that other 'real driving' tasks that introduce high workload and distraction among new drivers have similar detrimental effects on performance, and it is likely that the sudden addition of challenging (and unpractised) tasks plays a significant role with regards to the inflated accident liability of new drivers. Therefore, if GB's driver training can be evolved to ensure that new drivers are more competent at 'real driving' tasks, it is quite possible that this would have a meaningful effect on reducing the accident rates of new drivers. The inclusion of independent driving tasks into driver training and testing should be seen as the first step in a longer term programme of addressing the mismatch between driving experience pre-test, and driving experience post-test.

- Practical problems of implementation should be addressed through engagement with ADIs, and further research into the possible problems faced by minority groups such as those with disabilities. More data collection is required to ensure that future exercises do not unfairly disadvantage those learner drivers with language difficulties and learning disabilities.

Recommendations relating to situational judgement testing:

- On the basis of the findings on the situational judgement exercises, we recommend that these are not included as formal assessment components in the British practical driving test. In agreement with Helman (2008), we suggest that formal situational judgement testing belongs in the theory-testing element of the testing protocol, where standardisation of questions and answers is possible. However, use of such exercises in driver training to help provide a real-road context for building hazard perception skills may have value. However it should not be seen as an alternative to the video-based hazard perception testing used in the theory test, experience of which is known to reduce accident risk (e.g. Wells et al, 2008).

Acknowledgements

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Appendix A   The 'GDE' Matrix—reproduced from CIECA (2007)

GDE matrix: Goals for Driver Education

Hatakka, Keskinen, Glad, Gregersen, Hernetkoski, 2002

		Essential elements of driver training		
		Knowledge and skills	Risk-increasing factors	Self-evaluation
Hierarchical levels of driver behaviour	Personal characteristics, ambitions and competencies	• lifestyle • peer group norms • personal values and norms • etc.	• sensation-seeking • adapting to social pressure	• impulse control • risky tendencies • personal risky characteristics
	Trip-related context and considerations	• choice of route • estimated driving time • estimating urgency of the trip	• physiological condition of driver • social context and company in vehicle	• personal skills with regard to planning • typically risky motives when driving
	Mastery of traffic situations	• application of traffic rules • observation and use of signals • anticipation of events	• vulneable road users • breaking traffic rules / unpredictable behaviour • information overload • difficult (road) conditions	• strengths and weaknesses regarding driving skills in traffic • personal driving style
	Basic vehicle control	• control of direction and position of car • technical aspects of vehicle	• improper use of seatbelt, headrest, sitting position • under-pressure tyres	• strengths and weaknesses of basic vehicle control

Appendix B   Study information sheet for learner drivers

Independent Driving & Situational Judgement Study

INFORMATION SHEET for Candidates

Thank you for considering taking part in this study. To find out more about it and what you would be asked to do, take time to read this information sheet and discuss with your driving instructor if you wish.

What is the study about?

We are interested in how leaner drivers can handle:

1. **Independent Driving.** At the moment the driving instructor or driving examiner provides route directions to learner drivers in their lessons and on their test. Research tells us that after passing the driving test, new drivers find it quite hard to make their own mind up about how to get to where they want to go in a safe way. Therefore the DSA is thinking about including some practice at independent driving during training and in the driving test.

2. **Situational Judgement Testing.** This is about allowing learners to explain their thought processes to their instructor or examiner either before or after dealing with particular traffic situations. This would give learners the chance to discuss their actions and perceptions as a driver with their instructors and examiners, to help identify dangers and risks associated with various road situations, to be safe on the road.

What will I have to do?

You will be asked to take part in a driving event lasting about 35 minutes. During this time you will be asked to do three 'independent driving' exercises and two 'situational judgement' exercises.

For the independent driving you will be asked to:

- For a short period of time follow signs to a specific destination.

- Follow verbal directions given to you in a way that will be similar to those you would get from someone you had asked for directions (e.g. "Can you please tell me where the hospital is?")

- In a particular road you will be asked to turn your car around and it will be up to you how and when you turn the car around. This will be like a situation where you had lost your way and needed to turn the car around.

For the situational judgement testing you will be asked to:

- Pull up before a specific road situation (e.g. junction) and say what you would think about when driving through the situation.

- Pull up after a specific road situation (e.g. junction) and say what you thought about when you drove through the situation.

A DSA observer will be accompanying you and your instructor on the drive. The observer will make notes about your driving. Your responses to the situational judgement questions will also be recorded, so that we can see what kinds of things drivers say when asked these kinds of questions. You will also be asked to complete a short questionnaire and a short interview about what you think about the driving you were asked to do. **This will not be a test! We are just interested in your opinions, and the atmosphere will be relaxed.**

The questions and interview shouldn't take more than about 15 minutes and you can also have a well earned cup of tea or coffee!

What happens to the information collected?

All the data collected will remain confidential and you will remain anonymous at all times. You do not even need to provide your name or contact details on the questionnaire or interview. None of the information provided by you will be traceable back to you as an individual.

Do I have to take part?

It is up to you! If you want to take part you will be given a consent form to read and sign. If you change your mind you will still be able to withdraw from the study, however please let your instructor know well in advance (48 hours).

What do I get?

DSA will be paying your driving instructor for their time, which includes bringing you to DSA Cardington, taking part in the drive, and getting you back home. This means that you will be getting some free driving practice! Additionally, DSA will refund the fee for the next practical driving test you take (doesn't matter if it is your first test or a re-test). We will not need your personal details for this. When you come to the DSA centre for your drive, we will give you instructions on how you can claim for your free practical test.

What do I have to do if I want to take part?

If you want to take part, please inform your driving instructor who will arrange a suitable time with DSA for you to take part in this study. On the day, you will need to bring your provisional driving licence (including the counterpart) to prove that you are entitled to drive with an accompanying driver.

Contact details

If you have any more questions regarding the study, please discuss it with your driving instructor. Alternatively, you may wish to contact Jacqueline Upton, from the DSA on Tel: 0115 936 6154 or email: Jacqueline.Upton@dsa.gsi.gov.uk

Appendix C   Consent form

Independent Driving & Situational Judgement Study

Consent Form

I the undersigned voluntarily agree to take part in the study on Independent Driving & Situational Judgement Testing.

I have read and understood the Information Sheet provided. I have been given the opportunity to ask questions on all aspects of the study and have understood the advice and information given as a result.

I understand that all personal data relating to volunteers is held and processed in the strictest confidence, and in accordance with the Data Protection Act (1998). I agree that I will not seek to restrict the use of the results of the study on the understanding that my anonymity is preserved.

I understand that I am free to withdraw from the study at any time without needing to justify my decision and without prejudice.

I confirm that I have read and understood the above and freely consent to participating in this study. I have been given adequate time to consider my participation and agree to comply with the instructions and restrictions of the study.

Name of volunteer (BLOCK CAPITALS)   ....

Signed   ....

Date   ....

Name of person taking consent (BLOCK CAPITALS)...
Signed
....
Date
....

Participation in future studies: OPTIONAL

I am content for DSA to contact me again in respect of future research it may wish

to undertake. Please tick to confirm   ☐

Contact details:

Name   …………………………………………………………….

Address   …………………………………………………………….
                       …………………………………………………………….

Appendix D   Description of 'Route 55' used for driving event

Mock Test Route 55	November 2007

Name of Practical Test Centre……………Cardington
Type of Test Route…………………………Car (Independent driving)
Route Number………………………………55

Name/number of road	Direction
	DTC at R/bout Right
Paul Waller Avenue	E.O.R Right
Harrowden Lane	E.O.R Left
Bedford Rd	R/bout Ahead
(2nd Exit) Cardington Rd	R/bout left
(2nd Exit) Cambridge Rd	R/bout right
(2nd Exit) Cambridge Rd	R/bout ahead
Harrowden Road	R/bout right (Ask Q1) Meadowsweet
London Road	4th right
Acacia Rd	Pull up **Q1 After event** Road blocked exercise .
At the point in which the vehicle is turned around then follow a right block back to here	Ask sit judge **Before event** Acacia Road **Q 2**
	Then give briefing for next section. Follow signs
.	For Kempston E.O.R left
London Road	
Independent driving Starts: Follow Kempston	
	At R/Bt
	KEMPSTON
Break off from independent driving at next RBT. R/bout turn left onto bypass	KEMPSTON
Slip Rd Approx 1½ miles	KEMPSTON
The Highway	KEMPSTON
(1st Exit) The Highway	KEMPSTON
Harrowden Lane	
Paul Waller Avenue	R/bout Right
	R/bout Ahead
ADDITIONAL NOTES:	
Series of directions	
As Q about R/BT & Road blocked exercise	
What can you see, how you drive. Sit judge B4	
Traffic signs	

40 Minutes   9 Miles

Appendix E   DL25 form adapted for study

Appendix F   Situational judgement questions for the two scenarios

Scenario 1: Question asked after negotiating a roundabout.

"When you dealt with the last roundabout can you tell me what were the risks and dangers that you thought about?"

Scenario 2: Question asked before negotiating a bend in the road ahead with parked cars.

"What would you say the risks and dangers are when driving along this road?"

Appendix G   Questionnaire and interview schedule for learners

ID.		Route.	

Situational judgement and independent driving

Learner Drivers questionnaire

Thanks for taking part in the drive. We would also like to know what you thought about the exercises. To help us with this we would like you to answer some questions. Is that ok?

To make sure we capture what you say, we would like to record the interview on this recorder. The recording will only be used by the research team, and will be destroyed at the end of the study.

Also, everything you say is **completely confidential**—we never indicate your full name on these notes or on the recording and do not include participants' personal details in any further outputs of this study.

Are you ok with me switching on the recorder?

SECTION A: DRIVING EVENT EXERCISES

For each of the exercises that you just completed, I will now ask you some questions.

A1	**Following a series of directions given by the observer**
	This is where you were given a series of verbal directions to follow. Do you remember?
	Please indicate how much you agree or disagree with these statements on a scale of 1 to 5, where 1 is 'strongly disagree' and 5 is 'strongly agree'

		1	2	3	4	5
		Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
(a)	This exercise felt like the 'real driving' learners will do after they pass their test.	☐	☐	☐	☐	☐
(b)	This exercise should be part of the driving test in the future.	☐	☐	☐	☐	☐
(c)	This exercise was difficult.	☐	☐	☐	☐	☐
(d)	This exercise will help prepare learners for 'real driving' after their tests.	☐	☐	☐	☐	☐
(e)	This exercise was hurried or rushed.	☐	☐	☐	☐	☐
(f)	This exercise was mentally demanding.	☐	☐	☐	☐	☐
(g)	This exercise was frustrating.	☐	☐	☐	☐	☐

Open-ended questions:

(h) How would you feel if this exercise became part of the driving test in the future?
Why would you feel this way?

(i) What is the relevance of this exercise to 'real' driving?

(j) What training and preparation did you have for this exercise?
In what way did your instructor help you prepare for this exercise?

(k) What did this exercise teach you?

(l) What did you like most about the exercise?
Why?

(m) What did you dislike most about the exercise?
Why?

| A2 | **Describing a situation after driving through it**

This is where you were asked to describe the specific dangers and risks in a traffic situation, *after* you drove through the traffic situation. Do you remember?

Please indicate how much you agree or disagree with these statements on a scale of 1 to 5, where 1 is 'strongly disagree' and 5 is 'strongly agree' | | | | | |

		1	2	3	4	5
		Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
(a)	This exercise helped me to understand the hazards and risks in the situation.	☐	☐	☐	☐	☐
(b)	This exercise should be part of the driving test in the future.	☐	☐	☐	☐	☐
(c)	This exercise was difficult.	☐	☐	☐	☐	☐
(d)	This exercise will help prepare learners for 'real driving' after their tests.	☐	☐	☐	☐	☐
(e)	This exercise was hurried or rushed.	☐	☐	☐	☐	☐
(f)	This exercise was mentally demanding.	☐	☐	☐	☐	☐
(g)	This exercise was frustrating.	☐	☐	☐	☐	☐

Open-ended questions:

(h) How would you feel if this exercise became part of the driving test in the future?
Why would you feel this way?

(i) What is the relevance of this exercise to 'real' driving?

(j) What training and preparation did you have for this exercise?
In what way did your instructor help you prepare for this exercise?

(k) What did this exercise teach you?

(l) What did you like most about the exercise?
Why?

(m) What did you dislike most about the exercise?
Why?

A3	**Finding a safe place to turn the vehicle** This is where you were asked to turn the car around at some point in the road ahead. It was left up to you how and where you turned the car around. Do you remember? *Please indicate how much you agree or disagree with these statements on a scale of 1 to 5, where 1 is 'strongly disagree' and 5 is 'strongly agree'*

		1	2	3	4	5
		Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
(a)	This exercise felt like the 'real driving' learners will do after they pass their test.	☐	☐	☐	☐	☐
(b)	This exercise should be part of the driving test in the future.	☐	☐	☐	☐	☐
(c)	This exercise was difficult.	☐	☐	☐	☐	☐
(d)	This exercise will help prepare learners for 'real driving' after their tests.	☐	☐	☐	☐	☐
(e)	This exercise was hurried or rushed.	☐	☐	☐	☐	☐
(f)	This exercise was mentally demanding.	☐	☐	☐	☐	☐
(g)	This exercise was frustrating.	☐	☐	☐	☐	☐

Open-ended questions:

(h) How would you feel if this exercise became part of the driving test in the future?
    Why would you feel this way?

(i) What is the relevance of this exercise to 'real' driving?

(j) What training and preparation did you have for this exercise?
    In what way did your instructor help you prepare for this exercise?

(k) What did this exercise teach you?

(l) What did you like most about the exercise?
    Why?

(m) What did you dislike most about the exercise?
    Why?

| A4 | **Describing a situation before driving through it**.
This is where you were asked to describe the specific dangers and risks in the road ahead, *before* you drove through the traffic situation you described. Do you remember?

Please indicate how much you agree or disagree with these statements on a scale of 1 to 5, where 1 is 'strongly disagree' and 5 is 'strongly agree' |

		1	2	3	4	5
		Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
(a)	This exercise helped me to understand the hazards and risks in the situation.	☐	☐	☐	☐	☐
(b)	This exercise should be part of the driving test in the future.	☐	☐	☐	☐	☐
(c)	This exercise was difficult.	☐	☐	☐	☐	☐
(d)	This exercise will help prepare learners for 'real driving' after their tests.	☐	☐	☐	☐	☐
(e)	This exercise was hurried or rushed.	☐	☐	☐	☐	☐
(f)	This exercise was mentally demanding.	☐	☐	☐	☐	☐
(g)	This exercise was frustrating.	☐	☐	☐	☐	☐

Open-ended questions:

(h) How would you feel if this exercise became part of the driving test in the future?
Why would you feel this way?

(i) What is the relevance of this exercise to 'real' driving?

(j) What training and preparation did you have for this exercise?
In what way did your instructor help you prepare for this exercise?

(k) What did this exercise teach you?

(l) What did you like most about the exercise?
Why?

(m) What did you dislike most about the exercise?
Why?

A5	**Following direction signs** This is where you were asked to follow the signs and road markings to a specific destination. Do you remember? *Please indicate how much you agree or disagree with these statements on a scale of 1 to 5, where 1 is 'strongly disagree' and 5 is 'strongly agree'*					
		1	2	3	4	5
		Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
(a)	This exercise felt like the 'real driving' learners will do after they pass their test.	☐	☐	☐	☐	☐
(b)	This exercise should be part of the driving test in the future.	☐	☐	☐	☐	☐
(c)	This exercise was difficult.	☐	☐	☐	☐	☐
(d)	This exercise will help prepare learners for 'real driving' after their tests.	☐	☐	☐	☐	☐
(e)	This exercise was hurried or rushed.	☐	☐	☐	☐	☐
(f)	This exercise was mentally demanding.	☐	☐	☐	☐	☐
(g)	This exercise was frustrating.	☐	☐	☐	☐	☐

Open-ended questions:

(h) How would you feel if this exercise became part of the driving test in the future?
Why would you feel this way?

(i) What is the relevance of this exercise to 'real' driving?

(j) What training and preparation did you have for this exercise?
In what way did your instructor help you prepare for this exercise?

(k) What did this exercise teach you?

(l) What did you like most about the exercise?
Why?

(m) What did you dislike most about the exercise?
Why?

SECTION B: BACKGROUND INFORMATION

Please fill in questions B1 to B15 below.

B1   How old were you on your last birthday?

_____ years old

B2   Are you:

Male   ☐

Female   ☐

B3   Is English or Welsh your first language?

Yes—English   ☐

Yes—Welsh   ☐

No   ☐

B4   If English is not your first language, how confident do you feel about your ability to speak English? On a scale of 1 to 5, where 1 is 'not at all confident' and 5 is 'extremely confident'.

	1	2	3	4	5	
Not at all confident	☐	☐	☐	☐	☐	Extremely confident

B5   Which one of the following best describes your ethnic background?

Any white background ☐	Asian and white background	☐
Black African and white background ☐	Any other mixed ethnic background	☐
Bangladeshi ☐	Indian	☐
Pakistani ☐	Any other Asian background	☐
African ☐	Caribbean	☐
Any other black background ☐	Any Chinese background	☐
Arab ☐	Any other ethnic background	☐
Gypsy/ Irish or Scottish Traveller ☐	Don't know	☐

B6   Using the following Disability Discrimination Act definition, do you consider yourself to have a disability?

The Disability Discrimination Act defines a person as disabled if; "they have a physical or mental impairment which has a substantial and long term adverse affect on their ability to carry out normal day-to-day activities."

Yes   ☐

No   ☐

Don't know   ☐

B7   Approximately how many driving lessons have you taken to date?

_____   driving lessons

B8   How long does each driving lesson last?

_____   hours

B9   Approximately how many hours driving practice have you taken with friends and relatives?

_____   hours

B10   Approximately how many months have you been learning to drive?

_____   months

B11   Approximately what percentage of your driving lessons and practice have been in urban (town) and rural (country) areas?

_____%   urban

_____%   rural

B12   Have you taken your driving theory test?

Yes	☐	→ **IF YES: Did you pass?**	Yes	☐
			No	☐
No	☐	→ **IF NO: When do you expect to take it?**	Within 1 month	☐
			1–3 months	☐
			3–6 months	☐
			Later than 6 months	☐

B13   How many previous attempts have you had at your driving practical test?

_____   previous attempts

B14   When do you expect to take your first/next driving practical test?

Within 1 month	☐
1–3 months	☐
3–6 months	☐
Later than 6 months	☐

Personality questions

B15 Here is a list of statements which describe personality. Please indicate the extent to which you agree or disagree with each statement. You should rate the extent to which the statement applies to you, even if one characteristic applies more strongly than the other.

In the example, the person has agreed moderately that they are anxious, easily upset, and has disagreed strongly that they are reserved, quiet:

EXAMPLE	Disagree strongly	Disagree moderately	Disagree a little	Neither agree nor disagree	Agree a little	Agree moderately	Agree strongly
I am anxious, easily upset	☐	☐	☐	☐	☐	☑	☐
I am reserved, quiet	☑	☐	☐	☐	☐	☐	☐

Please ensure that you respond to all the statements.

	Disagree strongly	Disagree moderately	Disagree a little	Neither agree nor disagree	Agree a little	Agree moderately	Agree strongly
I am extroverted, enthusiastic	☐	☐	☐	☐	☐	☐	☐
I am critical, quarrelsome	☐	☐	☐	☐	☐	☐	☐
I am dependable, self-disciplined	☐	☐	☐	☐	☐	☐	☐
I am anxious, easily upset	☐	☐	☐	☐	☐	☐	☐
I am open to new experiences, complex	☐	☐	☐	☐	☐	☐	☐
I am reserved, quiet	☐	☐	☐	☐	☐	☐	☐
I am sympathetic, warm	☐	☐	☐	☐	☐	☐	☐
I am disorganised, careless	☐	☐	☐	☐	☐	☐	☐
I am calm, emotionally stable	☐	☐	☐	☐	☐	☐	☐
I am conventional, uncreative	☐	☐	☐	☐	☐	☐	☐

THANK YOU FOR YOUR TIME!

Appendix H   Questionnaire for ADIs

Situational judgement and independent driving study

ADI questionnaire

The Transport Research Laboratory (TRL) is conducting an independent research study into ADIs' views on a series of additional driving tasks with learner drivers that you have observed in the course of the study.

Please help us with the research by completing this questionnaire.

Please answer the questions as accurately as you can, following the instructions provided. This questionnaire is **completely confidential** and your answers will be used for research purposes only.
Thank you very much for your help.

SECTION A: GENERAL QUESTIONS

A1	How long have you worked as an approved driving instructor?
	_____ years _____ months

A2	Approximately how many learner drivers do you teach in an "average week"?
	_____ learner drivers

A3	Based on your experience, how many hours of tuition do learner drivers on average need to successfully pass their practical driving test?
	_____ hours

A4	Introducing new exercises to training and testing.
	If the following exercises were to be introduced when do you think they should be located in the training/testing process?
	Please tick ONE box on EACH line to indicate when during training/testing you think that the different exercises should be introduced

		In first lesson	Half way through learning	Shortly before the driving test	During the driving test	Other (please specify)
(a)	Exercise 1: follow a series of directions given by the observer	☐	☐	☐	☐	_____
(b)	Exercise 2: describe situation after traffic event	☐	☐	☐	☐	_____
(c)	Exercise 3: find a safe place to turn the car	☐	☐	☐	☐	_____
(d)	Exercise 4: describe situation before traffic event	☐	☐	☐	☐	_____
(e)	Exercise 5: follow direction signs	☐	☐	☐	☐	_____

A5	For those exercises that you recommended for introduction during training in question A4: On average, how many extra hours of tuition do you feel would be needed to prepare learner drivers for each exercise?		
(a)	Exercise 1: follow a series of directions given by the observer	_____	additional hours tuition
(b)	Exercise 2: describe situation after traffic event	_____	additional hours tuition
(c)	Exercise 3: find a safe place to turn the car	_____	additional hours tuition
(d)	Exercise 4: describe situation before traffic event	_____	additional hours tuition
(e)	Exercise 5: follow direction signs	_____	additional hours tuition

SECTION B: DRIVING EVENT EXERCISES

In the following, a number of statements are shown for each exercise that you observed learners complete during the driving event. Please indicate how strongly you agree or disagree with each statement by ticking ONE box on each line. You should respond based on your general observations of all the learners you accompanied on the driving event.

B1	**Following a series of directions given by the observer** This is the task where learner drivers were given a series of verbal directions to follow. *Please indicate how much you agree or disagree with these statements on a scale of 1 to 5, where 1 is 'strongly disagree' and 5 is 'strongly agree'*					
		1	2	3	4	5
		Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
(a)	This exercise felt like the 'real driving' that learners will do after they pass their test.	☐	☐	☐	☐	☐
(b)	This exercise should be part of the driving test in the future.	☐	☐	☐	☐	☐
(c)	This exercise appeared difficult for learners.	☐	☐	☐	☐	☐
(d)	This exercise will help prepare learners for 'real driving' after passing the test.	☐	☐	☐	☐	☐
(e)	This exercise appeared hurried or rushed for learners.	☐	☐	☐	☐	☐
(f)	This exercise appeared mentally demanding for learners.	☐	☐	☐	☐	☐
(g)	This exercise appeared frustrating for learners.	☐	☐	☐	☐	☐
(h)	This exercise will enable ADIs and Examiners to better discriminate safe and unsafe drivers.	☐	☐	☐	☐	☐

B2	**Describing a situation after driving through it** This is the task where learner drivers were asked to describe the various hazards and things that they concentrated on *after* they had driven through a particular traffic situation. *Please indicate how much you agree or disagree with these statements on a scale of 1 to 5, where 1 is 'strongly disagree' and 5 is 'strongly agree'*					
		1	2	3	4	5
		Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
(a)	This exercise will help learners to understand the hazards and risks in the situation	☐	☐	☐	☐	☐
(b)	This exercise should be part of the driving test in the future.	☐	☐	☐	☐	☐
(c)	This exercise appeared difficult for learners.	☐	☐	☐	☐	☐
(d)	This exercise will help prepare learners for 'real driving' after passing their test.	☐	☐	☐	☐	☐
(e)	This exercise appeared hurried or rushed for learners.	☐	☐	☐	☐	☐
(f)	This exercise appeared mentally demanding for learners.	☐	☐	☐	☐	☐
(g)	This exercise appeared frustrating for learners.	☐	☐	☐	☐	☐
(h)	This exercise will enable ADIs and Examiners to better discriminate safe and unsafe drivers.	☐	☐	☐	☐	☐

B3	**Finding a safe place to turn the vehicle** This is the task where learner drivers were asked to turn the car around at some point in the road ahead. It was left up to the learner how and where they turned the car around. *Please indicate how much you agree or disagree with these statements on a scale of 1 to 5, where 1 is 'strongly disagree' and 5 is 'strongly agree'*

		1	2	3	4	5
		Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
(a)	This exercise felt like the 'real driving' that learners will do after they pass their test.	☐	☐	☐	☐	☐
(b)	This exercise should be part of the driving test in the future.	☐	☐	☐	☐	☐
(c)	This exercise appeared difficult for learners.	☐	☐	☐	☐	☐
(d)	This exercise will help prepare learners for 'real driving' after passing their test.	☐	☐	☐	☐	☐
(e)	This exercise appeared hurried or rushed for learners.	☐	☐	☐	☐	☐
(f)	This exercise appeared mentally demanding for learners.	☐	☐	☐	☐	☐
(g)	This exercise appeared frustrating for learners.	☐	☐	☐	☐	☐
(h)	This exercise will enable ADIs and Examiners to better discriminate safe and unsafe drivers.	☐	☐	☐	☐	☐

B4	**Describing a situation before driving through it** This is the task where learner drivers were asked to describe the various hazards and things to look out for on the road ahead, *before* they drove through the traffic situation they had described. *Please indicate how much you agree or disagree with these statements on a scale of 1 to 5, where 1 is 'strongly disagree' and 5 is 'strongly agree'*					
		1	2	3	4	5
		Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
(a)	This exercise will help learners to understand the hazards and risks in the situation	☐	☐	☐	☐	☐
(b)	This exercise should be part of the driving test in the future.	☐	☐	☐	☐	☐
(c)	This exercise appeared difficult for learners.	☐	☐	☐	☐	☐
(d)	This exercise will help prepare learners for 'real driving' after passing their test.	☐	☐	☐	☐	☐
(e)	This exercise appeared hurried or rushed for learners.	☐	☐	☐	☐	☐
(f)	This exercise appeared mentally demanding for learners.	☐	☐	☐	☐	☐
(g)	This exercise appeared frustrating for learners.	☐	☐	☐	☐	☐
(h)	This exercise will enable ADIs and Examiners to better discriminate safe and unsafe drivers.	☐	☐	☐	☐	☐

B5	**Following direction signs** This is the task where learner drivers were asked to follow the signs and road markings to a specific destination *Please indicate how much you agree or disagree with these statements on a scale of 1 to 5, where 1 is 'strongly disagree' and 5 is 'strongly agree'*					
		1	2	3	4	5
		Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
(a)	This exercise felt like the 'real driving' that learners will do after they pass their test.	☐	☐	☐	☐	☐
(b)	This exercise should be part of the driving test in the future.	☐	☐	☐	☐	☐
(c)	This exercise appeared difficult for learners.	☐	☐	☐	☐	☐
(d)	This exercise will help prepare learners for 'real driving' after passing their test.	☐	☐	☐	☐	☐
(e)	This exercise appeared hurried or rushed for learners.	☐	☐	☐	☐	☐
(f)	This exercise appeared mentally demanding for learners.	☐	☐	☐	☐	☐
(g)	This exercise appeared frustrating for learners.	☐	☐	☐	☐	☐
(h)	This exercise will enable ADIs and Examiners to better discriminate safe and unsafe drivers.	☐	☐	☐	☐	☐

Thank you for your time!

Appendix I   ADI interview schedule

Situational judgement and independent driving study

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ADI Interview Guide

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Thank you for taking the time to participate in this feasibility study.

This interview will take approximately 30 minutes and I will ask you what you thought of exercises that you have observed.

To make sure I capture what you say, I would like to record the interview, with your permission. The recording will be used for research purposes only and will be destroyed at the end of the project. Only researchers at TRL (the company doing this research) will be listening to this tape. All that you say will be treated as confidential and findings will be anonymous when reported.

Remember there are no right or wrong answers. We are interested in your professional opinions regarding the exercises.

[Confirm that you have the permission to record and start recording].

   1. What have been your impressions of the NORA project so far?

Following a series of directions given by the observer

This is the task where the learner drivers were given a series of verbal directions to follow.

   1. What are your thoughts about DSA including this exercise in the practical driving test?

   2. What would the benefits be for learner drivers?

   3. What problems would you anticipate if this new task was incorporated into the existing test?
   Prompt: Can you think of any potential barriers to introducing this exercise into the driving test?

   4. Do you think that some candidates struggled more than others in this task?
   Prompt: Which type of candidate? E.g. those with a disability, certain type of personality, those with an ethnic minority. What makes these individuals more likely to find this task difficult?

5. If this task would be introduced into the driving test in the future, what implications would this have for training learner drivers?

6. Do you use anything similar to this task in your driving lessons? If so please specify details.

7. What do you think that a learner would need to do to successfully complete this task?
Prompt: How would a bad driver perform on this task? How would a good driver perform on this task?

Describing a situation after driving through it

This is the task where learner drivers were asked to describe the various hazards and things that they concentrated on *after* they had driven through a particular traffic situation.

1. What are your thoughts about DSA including this exercise in the practical driving test?

2. What would the benefits be for learner drivers?

3. What problems do you anticipate if this new task was incorporated into the existing test?
Prompt: Can you think of any potential barriers to introducing this exercise into the driving test?

4. Do you think that some candidates struggled more than others in this task?
Prompt: Which type of candidate? e.g. those with a disability, certain type of personality, those with an ethnic minority. What makes these individuals more likely to find this task difficult?

5. If this task would be introduced into the driving test in the future, what implications would this have for training learner drivers?

6. Do you use anything similar to this task in your driving lessons? If so please specify details.

7. What do you think that a learner would have to say in response to the situational judgement question to be successful in this task?
Prompt: How would a bad driver perform on this task? How would a good driver perform on this task?

Finding a safe place to turn the vehicle

This is the task where learner drivers were asked to turn the car around at some point in the road ahead. It was left to the learners to decide how and where they turned the car around.

1. What are your thoughts about DSA including this exercise in the practical driving test?

2. What would the benefits be for learner drivers?

3. What problems do you anticipate if this new task was incorporated into the existing test?
Prompt: Can you think of any potential barriers to introducing this exercise in the driving test?

4. Do you think that some candidates struggled more than others in this task?
Prompt: Which type of candidate? E.g. those with a disability, certain type of personality, those with an ethnic minority. What makes these individuals more likely to find this task difficult?

5. If this task would be introduced into the driving test in the future, what implications would this have for training learner drivers?

6. Do you use anything similar to this task in your driving lessons? If so please specify details.

7. What do you think that a learner would need to do to successfully complete this task?
Prompt: How would a bad driver perform on this task? How would a good driver perform on this task?

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Describing a situation before driving through it

This is the task where learner drivers were asked to describe the various hazards and things to look out for on the road ahead, *before* they drove through the traffic situation they had described.

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1. What are your thoughts about DSA including this exercise in the practical driving test?

2. What would the benefits be for learner drivers?

3. What problems would you anticipate if this new task was incorporated into the existing test?
Prompt: Can you think of any potential barriers to introducing this exercise in the driving test?

4. Do you think that some candidates struggled more than others in this task?
Prompt: Which type of candidate? E.g. those with a disability, certain type of personality, those with an ethnic minority. What makes these individuals more likely to find this task difficult?

5. If this task would be introduced into the driving test in the future, what implications would this have for training learner drivers?

6. Do you use anything similar to this task in your driving lessons? If so please specify details.

7. What do you think that a learner would have to say in response to the situational judgement question to be successful in this task?

Prompt: How would a bad driver perform on this task? How would a good driver perform on this task?

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Following direction signs

This is the task where learner drivers were asked to follow the signs and road markings to a specific destination

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1. What are your thoughts about DSA including this exercise in the practical driving test?

2. What would the benefits be for learner drivers?

3. What problems would you anticipate if this new task was incorporated into the existing test?

Prompt: Can you think of any potential barriers to introducing this exercise in the driving test?

4. Do you think that some candidates struggled more than others in this task?

Prompt: Which type of candidate? E.g. those with a disability, certain type of personality, those with an ethnic minority. What makes these individuals more likely to find this task difficult?

5. If this task would be introduced into the driving test in the future, how would you go about teaching or preparing learners to perform on this task?

6. Do you use anything similar to this task in your driving lessons? If so please specify details.

7. What do you think that a learner would need to do to successfully complete this task?

Prompt: How would a bad driver perform on this task? How would a good driver perform on this task?

<div style="border:1px solid #000; background:#ccffcc; padding:8px;">

Finally, thinking of the test experience as a whole

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1. Do you think introducing the exercises included in this trial will make the transition from accompanied learner to independent driver any easier?

Prompt: Why do you think so?

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Thank you very much for your time. Do you have any further questions or comments about the study?

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Appendix J   DSA examiner interview schedule

Situational judgement and independent driving study

DSA Examiner Interview Guide

Thank you for your help with conducting the trials and collecting the data for us.

This interview will take approximately 30 minutes and I will ask you what you thought of exercises that you have observed.

To make sure I capture what you say, I would like to record the interview, with your permission. The recording will be used for research purposes only and will be destroyed at the end of the project. Only researchers at TRL (the company doing this research) will be listening to this tape. All that you say will be treated as confidential and findings will be anonymous when reported.

Remember there are no right or wrong answers. We are interested in your professional opinions regarding the exercises.

[Confirm that you have the permission to record and start recording].

Following a series of directions given by the observer

This is the task where the learner drivers were given a series of verbal directions to follow.

8. What are your thoughts about DSA including this exercise in the practical driving test?

9. What would the benefits be for learner drivers?

10. What problems do you anticipate if this new task was incorporated into the existing test?
Prompt: Can you think of any potential barriers to introducing this exercise into the driving test?

11. Do you think that some candidates struggled more than others in this task?
Prompt: Which type of candidate? E.g. those with a disability, certain type of personality, those with an ethnic minority. What makes these individuals more likely to find this task difficult?

12. If this task was introduced into the driving test in the future, how do you think ADIs would teach it or prepare learners to perform well on this task?

Prompt: In your opinion what additional preparation will be required in driving lessons to prepare learner drivers for this element of the test?

13. What do you think that a learner would need to do to successfully complete this task?

Prompt: Can you describe what good performance this exercises would look like? Can you describe what bad performance in this exercise would look like?

Describing a situation after driving through it

This is the task where learner drivers were asked to describe the various hazards and things that they concentrated on *after* they had driven through a particular traffic situation.

---

1. What are your thoughts about DSA including this exercise in the practical driving test?

2. What would the benefits be for learner drivers?

3. What problems do you anticipate if this new task was incorporated into the existing test?

Prompt: Can you think of any potential barriers to introducing this exercise into the driving test?

4. Do you think that some candidates struggled more than others in this task?

Prompt: Which type of candidate? e.g. those with a disability, certain type of personality, those with an ethnic minority. What makes these individuals more likely to find this task difficult?

5. If this task was introduced into the driving test in the future, how do you think ADIs would teach it or prepare learners to perform well on this task?

Prompt: In your opinion what additional preparation will be required in driving lessons to prepare learner drivers for this element of the test?

6. What do you think that a learner would have to say in response to the situational judgement question to be successful in this task?

Prompt: What would be an appropriate answer? What answers would be inappropriate?

Finding a safe place to turn the vehicle

This is the task where learner drivers were asked to turn the car around at some point in the road ahead. It was left up to the learner how and where they turned the car around.

---

1. What are your thoughts about DSA including this exercise in the practical driving test?

2. What would the benefits be for learner drivers?

3. What problems do you anticipate if this new task was incorporated into the existing test?
Prompt: Can you think of any potential barriers to introducing this exercise in the driving test?

4. Do you think that some candidates struggled more than others in this task?
Prompt: Which type of candidate? e.g. those with a disability, certain type of personality, those with an ethnic minority. What makes these individuals more likely to find this task difficult?

5. If this task was introduced into the driving test in the future, how do you think ADIs would teach it or prepare learners to perform well on this task?
Prompt: In your opinion what additional preparation will be required in driving lessons to prepare learner drivers for this element of the test?

6. What do you think that a learner would need to do to successfully complete this task?
Prompt: Can you describe what good performance in this exercise would look like? Can you describe what bad performance in this exercise would look like?

Describing a situation before driving through it

This is the task where learner drivers were asked to describe the various hazards and things to look out for on the road ahead, *before* they drove through the traffic situation they had described.

---

1. What are your thoughts about DSA including this exercise in the practical driving test?

2. What would the benefits be for learner drivers?

3. What problems do you anticipate if this new task was incorporated into the existing test?
Prompt: Can you think of any potential barriers to introducing this exercise in the driving test?

4. Do you think that some candidates struggled more than others in this task?
Prompt: Which type of candidate? e.g. those with a disability, certain type of personality, those with an ethnic minority. What makes these individuals more likely to find this task difficult?

5. If this task was introduced into the driving test in the future, how do you think ADIs would teach it or prepare learners to perform well on this task?
Prompt: In your opinion what additional preparation will be required in driving lessons to prepare learner drivers for this element of the test?

6. What do you think that a learner would have to say in response to the situational judgement question to be successful in this task?
Prompt: What would be an appropriate answer? What answers would be inappropriate?

> **Following direction signs**
>
> This is the task where learner drivers were asked to follow the signs and road markings to a specific destination

1. What are your thoughts about DSA including this exercise in the practical driving test?

2. What would the benefits be for learner drivers?

3. What problems do you anticipate if this new task was incorporated into the existing test?
Prompt: Can you think of any potential barriers to introducing this exercise in the driving test?

4. Do you think that some candidates struggled more than others in this task?
Prompt: Which type of candidate? e.g. those with a disability, certain type of personality, those with an ethnic minority. What makes these individuals more likely to find this task difficult?

5. If this task was introduced into the driving test in the future, how do you think ADIs would teach it or prepare learners to perform well on this task?
Prompt: In your opinion what additional preparation will be required in driving lessons to prepare learner drivers for this element of the test?

6. What do you think that a learner would need to do to successfully complete this task?
Prompt: Can you describe what good performance this exercise would look like?
Can you describe what bad performance in this exercise would look like?

> **Finally, thinking of the test experience as a whole**

1. Do you think introducing the exercises included in this trial will make the transition from accompanied learner to independent driver any easier?
Prompt: Why do you think so?

2. Do these tests successfully differentiate between 'safe' and 'unsafe' drivers?
Prompts: In what way or how?

3. Are there any challenges that you foresee with regards to standardising the test across DSA test centres and training of other DSA examiners?
Prompt: What additional training do you anticipate that DSA examiners would need to allow them to consistently assess the new tasks?

> **Thank you very much for your time. Do you have any further questions or comments about the assessment and evaluation?**