

Measuring attitudes, balancing behaviours

Dr Lisa Dorn, Director of the Driving Research Group at Cranfield University, describes how psychometric profiling can assess and reduce the risks involved in at-work driving...

Drivers of company vehicles are more likely to be involved in crashes than private motorists, even when mileage has been taken into account, with as many as one in three road deaths involving someone driving while at work. This group includes not just those who drive for a living – bus, coach and goods vehicle drivers – but also company car drivers, driving to or from meetings. Fleet-based organisations need to assess the risk of driving for work and target interventions to meet legislative requirements. So how should driver risk be assessed?

To answer this question, we need to consider why at-work drivers are more likely to engage in risky driving behaviours compared with that of private motorists and why they are more vulnerable to being involved in a crash. Research shows that fatigue brought about by driving for long periods of time is a major factor, as well as driving under time pressure to meet schedules. Underpinning these two major factors though are the attitudes, beliefs and motivations that influence a driver's decision making. For example, it's not fatigue that causes drivers to crash – it's their decision to carry on driving when they know that they are sleepy. It's not time pressure that causes people to crash – it's whether a driver decides to speed or drive too close when they are late.

The decisions a driver makes stem from a complex mixture of past experiences, personality, and traffic events at the time. There are also a number of biases in the way drivers think. For example, drivers often fool themselves into believing that their driving is not dangerous and that they are unlikely to be involved in a crash. A standardised framework to address potential at-risk driver behaviour is unlikely to be effective unless the intervention is tailored to the individual driver. The future of driver education then must be on raising awareness about how personal goals and motivations affect decision-making and increase risk of being involved in a crash – but how can this be achieved?

Psychometrically-based self-assessment of driving behaviour

One method gathering momentum is to ask people about how they think and feel about driving, because they are the best judge of their beliefs and behaviours. To make this

process as objective as possible, the best technique available is the construction of a psychometric assessment. Psychometrics is the measurement of an individual's psychological attributes. The technique is widely used in educational, selection and recruitment, and clinical settings. Self assessment can also be beneficial for drivers. Indeed, the Driving Standards Agency has announced that it is looking into the feasibility of developing an assessment for learner drivers to reduce the risk of novice driver accidents.

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A psychometric assessment contains a number of key properties. The first property is that many questions are asked (called items) from several angles of the same construct. For example, if you get stressed in a traffic jam, you will probably also be stressed when under time pressure. Statistical analyses then checks which items are associated with each other and the resulting description is called a factor. The assessment is then tested on several different populations such as different age and sex groups. The purpose here is to check that the factors are applicable to subgroups and also to provide norm groups or benchmarks against which respondents are judged.

Another important property of a psychometric assessment is re-testing the same individual to check that the measure is stable over time and does not change dependent on the context. When the development of the content is deemed to be completed, a set of rules is adopted for the calculation of scores to provide an individualised psychometric profile.

To predict driver risk then, we need to ascertain in advance whether a driver possesses attributes that could place them in danger of being involved in a crash. The final property of a psychometric assessment is to confirm its validity and check that it measures what it is supposed to. It is expected that a valid assessment of driver behaviour should be



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associated with objective measures such as preferred speed, number of crashes, traffic violations, etc.

Using a driver psychometric assessment to reduce risk

So, having established this psychometric assessment of driver behaviour, how can it be used in practice? Some vehicle operators have considered its use in selection and recruitment of drivers, but this may be counter-productive. Drivers are likely to claim that their behaviour is safe to get the job, responding with what they think is an appropriate answer, rather than how they really behave. To counteract this potential source of bias, any psychometric assessment of driver behaviour must include items relating to a tendency to deliberately give favourable self-descriptions, as well as positively biased but subjectively honest self-descriptions.

There are two ways in which a psychometric assessment of driver behaviour and attitudes can serve as an intervention for vehicle operators to manage their at-work driver risk. Firstly, by delivering an individualised psychometric feedback profile showing how each driver scores relative to the standard benchmark. In doing so, attention can be directed towards an individual's personal risk and areas for self-improvement suggested. Better still, the same profile would serve as a training needs analysis for driving instructors. It could profile the potential sources of behavioural and additional risk for trainers to target during driver training sessions.

Work at Cranfield University

At Cranfield, we have pioneered the development of psychometric instruments for self-assessment and driver education purposes based on research reported in almost 40

academic publications. The assessments have been made commercially available since 2005. The DRIs are currently being used by over 40 vehicle operators in the UK, including the emergency services passenger services and fleet companies. The assessments are available for online completion, easily administered, user-friendly and cost-effective and provide instant emailed individualised psychometric feedback profiles.

Addressing attitudinal and behavioural characteristics requires a level of skill that currently driving instructors have not yet been trained to deal with. The real benefit in the use of a self assessment is the intervention put in place to mitigate the risk it identifies. To address the skills gap, a three day short course has been developed that can train instructors in these competencies. Gaining knowledge about the human factors in driving is highly desirable – but being able to influence driver behaviour and attitude is even more crucial. Using these kinds of behaviourally-based approaches to managing risk has the potential to make significant improvements in the frequency and severity of vehicle operator crashes.



Dr Lisa Dorn
Director of the Driving
Research Group
Cranfield University
Cranfield
Bedfordshire MK43 0AL
Tel: 01234 758229
L.Dorn@cranfield.ac.uk
www.cranfield.ac.uk

