

Correlates of simulator sickness in a truck driver training programme and the development of an effective screening process

*Nick Reed & Andrew M. Parkes
TRL Limited, Wokingham
UK*

Abstract

The incidence of simulator sickness impacts all simulators that purport to provide drivers with a realistic experience. It has symptoms similar to motion sickness but can occur in the absence of physical motion of the observer. TRL was commissioned by the Scottish Executive to train 700 professional commercial vehicle drivers on two full mission truck simulators. Monitoring the incidence and effects of simulator sickness were paramount to the success of the programme. The aim of the driver training was to improve driver safety and fuel efficiency. Drivers on the programme completed a short familiarisation drive before completing two sets of four exercises, spending about an hour in the simulator in total. The simulator recorded drivers' fuel efficiency, gear changes, speed, and time taken. Drivers also completed questionnaires as part of the training programme, one of which was the simulator sickness questionnaire (SSQ) proposed by Kennedy, Lane, Berbaum, and Lilienthal (1993), completed before and after driving the simulator. This enabled drivers' subjective feelings of sickness to be recorded. Drivers rated their experience in the simulator very highly and showed significant improvements in their driving performance. Driver age and previous experience of motion sickness were both correlated with reported sickness level. There was also a significant correlation between drivers' attitudes to technology and their susceptibility to simulator sickness. The implications of these results for the development of screening processes to reduce the incidence of simulator sickness and the consequences for the use of simulators for driver training are discussed.

Introduction

Simulator technology is well established in the aircraft industry for pilot training. It offers the trainee the opportunity to experience (potentially dangerous) training scenarios repeatedly in a safe environment where performance can be studied and reviewed with a high degree of accuracy. With the increased availability of low cost computer technology capable of displaying realistic virtual environments and managing complex vehicle dynamics calculations, simulators are now being used for training in other domains such as road vehicles. However, an important problem that

In D. de Waard, G.R.J. Hockey, P. Nickel, and K.A. Brookhuis (Eds.) (2007), *Human Factors Issues in Complex System Performance* (pp. 221 - 234). Maastricht, the Netherlands: Shaker Publishing.