Evaluation of in-vehicle HMI using occlusion techniques: experimental results and practical implications

Abstract:
Despite the usefulness of new on-board information systems one has to be concerned about the potential distraction effects that they impose on the driver. Therefore, methods and procedures are necessary to assess the visual demand that is connected to the usage of an on-board system. The occlusion-method is considered a strong candidate as a procedure for evaluating display designs with regard to their visual demand. This paper reports results from two experimental studies conducted to further evaluate this method. In the first study, performance in using an in-car navigation system was measured under three conditions: static (parking lot), occlusion (shutter glasses), and driving. The results show that the occlusion-procedure can be used to simulate visual requirements of real traffic conditions. In a second study the occlusion method was compared to a global evaluation criterion based on the total task time. It can be demonstrated that the occlusion method can identify tasks which meet this criterion, but are yet irresolvable under driving conditions. It is concluded that the occlusion technique seems to be a reliable and valid method for evaluating visual and dialogue aspects of in-car information systems.

Zeitschriftentitel: Applied ergonomics
Jahr: 2004
Band: 35