

Recognition of electronic road signs

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Abstract

The extent to which electronic traffic signs were perceived as having the same meaning as their 'painted' counterparts was studied. These signs were presented to 107 subjects. Results showed that the large majority of subjects recognised the electronic signs as an alternative to the standard painted sign. Subjects were also acquainted with the meaning of the signs. However, with respect to the subjective appraisal in terms of good/bad, legibility, clearness, and pleasantness, the electronic signs are rated more as more negative than the standard painted signs. Many of the subjects preferred the painted signs to the electronic signs.

Introduction

The main purpose of traffic signs is to provide the road user with unambiguous information with respect to road environment and condition, and to allow for anticipation and behavioural adaptation to these circumstances (Drory & Shinar, 1982, Fisher, 1992). For this purpose 'painted' signs are most commonly used. The main disadvantage of these signs is the fact that they are static and cannot be changed quickly to local conditions. Electronic signs do not suffer from these drawbacks and in many countries electronic speed limit signs are now implemented in traffic. With increased traffic flow, a flexible way of imposing a speed limit on traffic allows for maximum use of the road's capacity. The use of electronic signs is also very convenient in case of suddenly changing circumstances, like in atmospheric conditions such as suddenly appearing fog or slippery roads. A painted warning sign for a slippery road on a 30°C summer's day is very much out-of place, while an electronic warning is only 'present' when appropriate, and it is highly likely that it will be taken more seriously.

Differences between electronic signs and standard traffic signs are in terms of colour, and with respect to resolution, which is lower for electronic signs (see figure 1). Colours are partly reversed, i.e., the background colour is white on traditional signs and black on electronic signs. The pictogram or the digits indicating the speed limit are white on electronic signs, and black on traditional. The red circular border, however, is the same on both signs. Possible confusion may also arise from non-standardised use of electronic traffic signs between different countries. For example, the same electronic speed limit signs are used in the Netherlands and in Sweden, but these signs have a different meaning in these two countries. In the Netherlands the indicated speed used to be an advisory speed, and while this was changed to a legal