

## **INFLUENCING ROAD USERS' BEHAVIOUR**

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# influencing road users' behaviour

*Influencing road users' behaviour and its application for promoting the use of safety devices*



INSTITUTE FOR ROAD SAFETY RESEARCH SWOV

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The Institute for Road Safety Research SWOV was founded in 1962. Its object is, on the basis of scientific research, to supply the authorities with data for measures aiming at promoting road safety. The information obtained from this scientific research is disseminated by SWOV, either as individual publications, or as articles in periodicals or via other communication media.

SWOV's Council consists of representatives of various Ministries, of industry and of leading social institutions.

The Bureau is managed by E. Asmussen, SWOV's Director. Its departments include: Research Policy, Research Co-ordination, Research Services, Theoretical Research Pre-crash Projects, Applied Research Pre-crash Projects, Crash and Post-crash Research and Information.

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# Foreword

Work is regularly being done locally, regionally and nationally on influencing road users' behaviour, in the form of road traffic regulations and their enforcement, and in the form of publicity campaigns. This is often done by the authorities and appropriate organisations, but sometimes such campaigns spring spontaneously from persons and groups.

For some years the Institute for Road Safety Research SWOV has been regularly asked to make scientific contributions for this purpose. These mostly consisted of testing psychological and methodological expertise on this subject against the results of scientific fieldwork elsewhere. This provided considerable knowledge of this subject.

Meanwhile, SWOV has done field research in the framework of publicity campaigns by the Dutch Road Safety Association introducing a number of road traffic regulations. The knowledge gained in this fieldwork combined with the insight already obtained is now summarized in this publication. A large number of research projects in the Netherlands and other countries have been studied, the results of which are tabulated too. Recent Dutch regulations relating to seat belts and — as a comparison — crash helmets for moped riders are also examined.

This publication is intended to indicate the present knowledge of influencing behaviour in aid of road safety. Various forms of influencing behaviour are examined, together with their possibilities and limitations, and a model design is given for publicity campaigns. But no effort has been made to offer definitive solutions of the various problems.

The publication has been written by P.C. Noordzij, Research psychologist; who has availed himself of earlier studies by the SWOV research workers J.H. Kraay, Research sociologist, and D.J. Griep †, Research psychologist.

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# Introduction

Road users' behaviour is largely determined by the observed features of the road (and everything pertaining thereto), other traffic and the own vehicle. Partly, these features induce certain spontaneous behaviour. And partly the observed features lead to certain behaviour because of the significance attributed to them, for instance due to a knowledge of physical laws and road traffic regulations.

Besides this, there is a variety of other factors determining road users' behaviour, quite apart from the features mentioned above. They include among others: skills, mental and physical condition, the reasons for traffic participation.

Thus, all kinds of measures can be taken for influencing road user's behaviour without having to change road, traffic or vehicle features. The principal measures in this field are road traffic regulations and their enforcement, publicity campaigns and road users' education, training and selection.

Chapter 1 of this publication deals with road traffic regulations and their enforcement; Chapter 2 discusses publicity campaigns. Both kinds of measures may serve various purposes: safety, traffic flow, conservation of the environment, etc. But only those measures will be examined that are aimed at promoting road safety.

Chapter 1 first presents a theoretical discussion of the problem. An endeavour has been made to present the various ideas and viewpoints put forward in the literature in their mutual relationship. The theory is followed by examples found in field research. The state of affairs is not yet so far that a simple guide can be given to the choice and formulation of road traffic regulations or to police supervision and punishment. Chapter 2 seeks a link-up with 'Road Safety Campaigns: Design and Evaluation' (Wilde, 1971), reporting the state of affairs in the field of publicity campaigns and presenting a model design for these and for the attendant evaluating research.

Chapter 3 discusses measures for promoting the use of safety devices (especially seat belts). It is shown that different forms of influencing behaviour can be used for one and the same subject. This section is also a current example of influencing behaviour with clearly favourable results.



# 1. Road traffic regulations and their enforcement

## 1.1. General

The characteristic feature of road traffic regulations and their enforcement is the endeavour to reduce undesirable behaviour by prescribing what is required, by making offences punishable and by detecting and punishing them. This definition makes two assumptions:

1. Where the objective is road safety, the punishable behaviour is regarded as potentially unsafe.
2. Prescribing rules, and consequently detecting and punishing offences will reduce the number of offences.

As to the first assumption, there are two possibilities:

- a. there is an indirect relationship between behaviour and chance of accident because the prescribed behaviour makes the traffic situation more predictable and hence eases the task of the road user (e.g. keep to the right, priority rules);
- b. there is a more direct relationship between behaviour and chance of accident or injury (e.g. drinking-driving, the use of crash helmets or seat belts, using lights after dark).

As to the second assumption, there are also two cases:

- a. special deterrence: the effect of punishing a detected offence upon the person committing it;
- b. general deterrence: the effect of road traffic regulations and their enforcement upon an entire group without every individual having personally experienced a penalty.

The sociological explanation of the general deterrent effect is that norms (road traffic rules) generally accepted by a group ultimately become internalised to new members of such a group (See, e.g., Van Doorn & Lammers, 1969).

The prospect of punishment for non-compliance with this norm may then help to make the desired behaviour a habit. If the norm is not generally accepted but is imposed from the outside, the expected consequences of not complying with it may make the individual decide to comply.

This is a psychological explanation in which behaviour is regarded as the result of comparing various possibilities, each with a given attractiveness, demanding a given effort and involving a given risk (See, e.g., Woodworth & Schlosberg, 1965).

The special deterrent effect can also be defined in these terms as the awareness of the violation of existing norms or as a revision of the process of comparison as a result of having gained personal experience.

Hence, there are two major factors governing compliance with road traffic rules:

- a. the acceptance of road traffic rules;
- b. the risk of punishment for violation.

## 1.2. Acceptance of road traffic rules

The acceptance of road traffic rules can be measured by the degree of voluntary compliance without there being any actual detection or punishment of offences. The conditions for acceptance of a rule are:

1. The rule must be *known*.
2. It must be *practicable*. That is to say: it must be humanly possible to avoid violating it.

Furthermore, the acceptance of road traffic rules will be made easier by a number of their qualities. The following enumeration is a combination of data from the literature (See, inter alia, Klein & Waller, 1970; Cramton, 1968; Mattie & Kraay, 1971; Blumenthal, 1972).

*Efficacy* from an aspect of road safety, that is to say: the road user must realise that compliance with the rule reduces the chance of accident and its potentially unpleasant consequences. International uniformity and uniformity of application in each situation contribute to the idea of the rule's efficacy.

*Clarity*. The description of the desired behaviour must be clear enough to go by. It must be obvious if a rule is being violated. Especially for rules whose validity is determined by the situation, this means that the situation must be recognisable.

*Recognisability* of the desired behaviour. This usually means that the desired behaviour can be clearly defined and that it can be observed whether other road users are complying with it. The latter is necessary to get the idea that obedience is socially accepted and that it is easy to be detected in case of violation.

*Attractiveness* of the desired behaviour, respectively unattractiveness of punishable behaviour from a different aspect than road safety. The punishable behaviour must be unattractive, for instance because of the existence of other behaviour possibilities and the inconvenience caused by offending.

*Social acceptance*. Although social acceptance itself is influenced by the above qualities, socially accepted rules are accepted more easily by the individual.

The observance of individual rules is also determined by the qualities of the totality of rules. Deficiencies in the totality, for instance incompleteness or contradictions, will have an adverse effect on compliance with individual rules.

Lastly, the importance attached to road safety in general or to road traffic rules as contributing to road safety also determines the acceptance of individual rules.

## 1.3. Risk of punishment for violation

Objectively, the risk of punishment for an offence consists of:

- a. the chance of being stopped;
- b. the chance of being suspected;
- c. the chance of prosecution;
- d. the chance of being sentenced and punished;
- e. the nature and extent of the penalty.

a, b and c can be summarised as the chance of detection.

As far as the risk of punishment plays a role, it is that of experiencing it personally. This is based on what people hear, read or see of police enforcement and the policy regarding prosecution and punishment (See Kraay, 1974). The idea is that fewer offences are likely to be committed if the chance of detection is greater, if punishment is more likely and if the penalty is felt to be more severe. Punishment is likely to be more effective the closer it is to the time of the offence. Rewarding the desired behaviour seems to have a longer lasting effect than punishing undesirable behaviour. All that punishment does is to suppress this behaviour temporarily. Variation in the policy regarding detection and punishment is generally regarded as inadvisable. Lastly, it can be assumed that the role played by the risk of punishment for violation is less important when there is greater acceptance of the rule.

The above takes the road user's behaviour as the starting point. The police function can also be analysed in a similar way, the aspects being: their own acceptance of the rule, the difficulty in holding and prosecuting suspects, the prosecution and punishment policy, the attitude of the public, the importance of road safety as compared with their other duties.

#### **1.4. Examples from field research**

The following sub-sections will examine the extent to which the above theory is substantiated by field research.

##### *1.4.1. Acceptance of road traffic rules*

In Victoria, Australia, the compulsory use of seat belts was preceded by a publicity campaign. There seems to be little police supervision regarding compliance. Immediately after introduction the use of seat belts was found to have greatly increased (Vulcan, 1973). Two explanations are possible:

1. Unfamiliarity with the risk of punishment for violation makes drivers more careful.
2. When car drivers are convinced of the effectiveness of seat belts, the legal obligation itself is sufficient reason to accept that using a seat belt is normal behaviour.

The following example supports the second explanation (See also Chapter 3). In 1974, crash helmet wearing by Dutch moped riders practically doubled (SWOV, 1975). In mid-1973, the forthcoming compulsory use of crash helmets was announced and a publicity campaign started. Since their use was not yet compulsory and even the operative date was not yet known, this development cannot be related to any risk of punishment for non-compliance.

An example of a regulation that was neither accepted by road users nor by the police and had little or no effect when introduced, was the legal blood alcohol concentration limit in France. Roadside surveys into the b.a.c. distribution of drivers, stopped at random before and after the law was passed, showed hardly any difference (ONSER, 1970).

##### *1.4.2. Risk of punishment for violation*

Abolition of a regulation indirectly reveals the general deterrent effect of the risk of punishment. In some American states and in Canada the legal drinking age was

lowered. As regards drinking by drivers (Clark et al., 1973) and (drinking) accidents (Douglas et al., 1974; Williams et al., 1974; Whitehead et al., 1974 and Schmidt & Kornaczewski, 1974), an adverse increase was found for young drivers.

#### *Chance of detection*

Research among older pedestrians on supervision of violations of road-crossing regulations combined with education, revealed an improvement in road-crossing behaviour as long as the campaign lasted (Wiener, 1968). A number of older pedestrians were totally unsusceptible.

There have been various investigations into the effect on motorists' speeds of the presence of policemen or police cars. An example is that of Joscelyn et al. (1971). The police presence reduced the number of speeding offences locally, but the effect was lessened the further away the motorist was. The effect was greater with stationary police patrol cars than with those on the move, and greater still when the impression was given that offences were being checked.

Some special findings in such research are the diminished attention paid to traffic signs in the police car's immediate vicinity (Syvänen, 1968), a greater effect on the speed of traffic moving in the opposite direction (Rowan & Keese, 1962) and a reduction in the time taken for two successive cars to pass (Calica et al., 1963). The last two findings were not confirmed by Joscelyn's work.

Research into the effect of police supervision also disclosed an effect on other behaviour such as lane position and overtaking (Ekström et al., 1966). Cooper (1974) found that police checks at intersections in urban areas reduced the number of offences only as long as the police were present. This conclusion moreover applied only to minor offences.

The above examples relate to a limited form of general deterrence: the immediate effect of the police presence. Kraay (1974) calls this form of general deterrence repressive.

A reduction in the number of accidents during the experimental supervision period suggests a more general deterrent effect (Munden, 1966).

Irby & Jacobs' research (1960) shows a major reduction in accidents following police supervision. But the findings are of limited applicability because the research relates to the driving habits of occupants of a military camp.

Research by Williams & Robertson (1974) indicates that increased, large-scale police supervision has no demonstrable effect on accidents. Police checks were maintained at a level that was practicable for longer term enforcement.

The Danish Road Safety Research Council (Rådet for Trafiksikkerhedsforskning, 1974) experimented too for a year with this without any detectable reduction in the number of accidents. Nor had motorists interviewed noticed any increase in the level of supervision.

Another example of the general deterrent effect of police supervision is given by Buikhuisen & Van Weringh (1969) into the effect of a tyre campaign. Publicity and actual supervision led to worn tyres being replaced. Here again, applicability is slight because of the campaign's local character, the publicity and the behaviour investigated (one single operation).

Research by Toomath (1974) relates to a number of special measures: trebled police

supervision, accompanied by extensive publicity, in a provincial town. Toomath found a reduction in the number of accidents causing injury and in the number of offences. How long this effect lasted is not known.

Lastly, the effect of introducing new drinking and driving legislation in Britain can be explained in terms of the chance of detection. The new Act makes it possible for this chance to be increased. The temporary reduction found in the number of nighttime accidents can therefore be looked upon as the result of motorists being cautious towards the as yet unknown police action. As time went by the chance of detection proved to be not as great as they had prudently assumed and former habits were resumed (Ross, 1973).

It is no simple matter to carry out suitable research into the effect of police supervision. Its short-term effect will often be indistinguishable from that of its mere announcement.

The semblance of an experiment should be avoided as well as the appearance of arbitrary supervision. The problem of longer term supervision is to keep it at a constant level. There is also the risk of an effect extending into the area selected for comparison. It nevertheless seems advisable for such an investigation to be made and at the same time to examine the effects of advanced aids. It should be noted that such research only has any point if the rule or rules being examined are carefully selected and if optimum aids are employed.

#### *Chance of being sentenced and punished*

In the Netherlands — as far as is known — there is between most violations little difference in the chance of being sentenced and being punished. Therefore this subject will not be discussed in this publication.

#### *Nature and level of the penalty*

Buikhuisen (1968) and Steenhuis (1972) did research work into the effect of the level of the penalty for drinking-driving on the chance of a repetition of the offence. Their point of departure is the differences in penalties as between individuals or as between regions. No differences were found in the chance of repetition.

Stronger evidence is provided by experiments in which the penalty is fixed arbitrarily by the researcher. Scope for such experiments is limited. Blumenthal & Ross (1973) found that with traffic offences (such as not using indicators, getting into the wrong lane) there was no difference in the effect which the potential penalties (a warning, appearance in court, settlement of fine by arrangement) had on the chance of following offences or accidents.

In several states of America offences are recorded and expressed as penalty points. In addition to the penalty for each individual offence, the collection of a number of penalty points leads to action being taken. It is customary to give a warning first, while when following offences are committed the action may take the form, for instance, of a personal or group discussion or attendance at a course being ordered.

The effect of warning letters on the chance of following offences and accidents proved to depend on the form of letter and the offender's age and sex (Kaestner et al., 1967; McBride & Peck, 1970).

Owens (1967) examined the effect of various actions (fine, attending a driver-improvement school, probation or a combination of these) if a given number of penalty points

was exceeded. Two years later, the group with a fine + school was found to have had fewer accidents than the group that had been fined only.

Kaestner (1968) reviews research into the effect of the action taken when a number of penalty points is exceeded. He found that a personal talk did have an effect upon the chance of following offences, while one or more group discussions did not.

Comparison of various forms of individual and group meetings, after a given number of penalty points was exceeded (Marsh, 1971), showed that one form of group meeting lessened the chance of accidents (while another increased it); some other procedures reduced the chance of offences. A follow-up when penalty points were collected anew also reduced the chance of accidents.

In Schuster's research (1974) it was decided at random after individual discussion whether the driver should be given the customary penalty or a milder or more severe one. After this the number of offences and accidents was recorded for five years. The writer concludes from the results that penalties have to be increasingly severe when penalty points are repeatedly collected, in order to reduce the chance of accidents. The data might, however, be subject to other interpretations.

No major effect can be expected from one particular treatment because the many factors involved may vary from case to case; for instance:

- the cause of a road user violating regulations more often or being more involved with accidents than average;
- the reason why he qualifies for treatment;
- personal mental constitution as related to the nature of treatment;
- overall and detailed differences between forms of treatment;
- difference in long and short-term effects;
- the interaction between an experimental treatment and the existing or usual treatments, to which a part of the effect of the experimental treatment can be ascribed.

For instance Schuster (1969) suggests on the basis of research results that severe penalties work the wrong way with drivers who have collected penalty points for the first time. But they have a positive effect on drivers who repeatedly collect them.

These examples of research relate solely to the possible specially deterrent effect of punishment. The potential contribution of this effect to road safety is bound to be slight because of the small category of road users involved and the slight chance of this category having more offences or accidents than normal without punishment (Griep, 1974; Campbell & Levine, 1973).

But if a check nevertheless has to be kept on this small category, a centralised record of offences and accidents will be necessary. Even so, the group ultimately selected will not in all respects be the group required. Drivers covering a big mileage have more chance of a violation being detected than those with a low mileage. Lastly, it is probable that the group of drivers involved in accidents does not correspond with the total group committing offences. This can be the consequence of among others: the fact that people among whom offences are detected have characteristics that make them extra conspicuous for the police. This can be concluded, as regards drinking-driving, from research by Clark (1972), Perrine et al. (1971) and Pollack (1970).

A general deterrent effect caused by the nature of the penalty is difficult to investigate. An example with limited applicability is the work by Barmack & Payne (1961). Occupants of a military camp were threatened with possible discharge or psychiatric



treatment. At the same time, information was given on drinking-driving. The result was a reduction in the number of accidents.

### **1.5. Summary and conclusions**

Apart from the quality of research, the number of subjects and the number of road traffic regulations covered by the research projects described is small. Hence, a complete picture is unobtainable.

The following conclusions can be drawn from the available examples (See also Table 1 : Examples from field research):

1. A number of road traffic regulations are commonly obeyed without the detection and punishment of offences being of importance to this. A legal obligation may be the direct cause of the desired behaviour taking place.
2. The police presence may cause a temporary reduction in the number of offences at the particular location. Intensified police supervision may lead to a reduction in the number of accidents. The latter requires an enforcement level that is not a permanent practical proposition with present staffing levels and the present aids.
3. As regards special deterrence, warning letters and meetings have attractive possibilities. But the contribution of successful special deterrence to road safety is bound to be slight.
4. As for the opportunities for research being scarce, the question whether the customary penalties have a general deterrent effect cannot be answered.

Author	Behaviour rule or rules	Type of research	Measure	Results
<i>Acceptance of norm</i>				
Vulcan (1973)	use of seat belts	time series	compulsory use	increased using of seat belts decrease in casualties
SWOV (1975)	use of crash helmets	time series	announcement of compulsory use plus publicity	increased using of crash helmets
ONSER (1970)	drinking-driving	time series	b.a.c.* limit	hardly any effect on b.a.c. distribution
<i>Risk of punishment (general deterrence)</i>				
Clark et al. (1973)	drinking-driving	time series	lowering legal drinking age	more young-driver drinking
Douglass et al. (1974)	drinking-driving	time series with control	lowering legal drinking age	more young-driver accidents
Williams et al. (1974)	drinking-driving	time series with control	lowering legal drinking age	more young-driver accidents
Whitehead et al. (1974)	drinking-driving	time series	lowering legal drinking age	more young-driver accidents
Schmidt & Kornaczewski (1974)	drinking-driving	time series	lowering legal drinking age	more young-driver accidents

Table 1. Examples of field research

\* blood alcohol concentration.

Author	Behaviour rule or rules	Type of research	Measure	Results
<i>Chance of detection</i>				
Wiener (1968)	crossing by pedestrians	experiment with control	intensified supervision plus information	temporary effect on offences
Joscelyn et al. (1971)	speeding	experiment with control	police presence	fewer offences in vicinity of police
Ekström et al. (1966)	various	experiment with control	police presence	inter alia improved driver behaviour
Cooper (1974)	intersection behaviour	experiment with control	police presence	fewer minor offences while police present
Munden (1966)	speeding	experiment with control	intensified supervision	fewer offences, fewer accidents
Irby & Jacobs (1960)	various	time series	intensified supervision	fewer accidents
Williams & Robertson (1974)	various	experiment with control	realistic supervision	no effect on accidents
Rådet for Trafiksikkerhedsforskning (1974)	various	experiment with control	realistic supervision	no effect on accidents
Buskhuisen & Van Weeringh (1969)	tyre condition	experiment with control	directed supervision plus publicity	fewer worn tyres
Toomath (1974)	various	time series	intensified supervision plus publicity	fewer accidents, fewer offences
Ross (1973)	drinking-driving	time series	b.a.c. limit plus publicity	temporary cautiousness and fewer accidents

Author	Behaviour rule or rules	Type of research	Measure	Results
<i>Nature of penalty (special deterrence)</i>				
Buikhuisen (1968)	drinking-driving	natural comparative	variation in penalty	no effect on chance of repetition
and Steenhuis (1972)		experiment		
Blumenthal & Ross (1975)	various	comparative experiment	variation in penalty	no effect on chance of offence or accident
Kaestner et al. (1967)	penalty points	experiment with control	letter	less chance of offence or accident
McBride & Peck (1970)	penalty points	experiment with control	letter	less chance of offence or accident
Owens (1967)	penalty points	comparative experiment	variation in penalty	with course plus fine less chance of offence or accident than with fine alone
Kaestner (1968)	penalty points	experiment with control	individual or group discussion	less chance of offence with individual discussion; no effect with group discussion
March (1971)	penalty points	experiment with control	variation in treatment	one form of group meeting less chance of accident (other form more chance)
Schuster (1974)	penalty points	comparative experiment	individual discussion plus variation of penalty	fewer accidents owing to severer penalties for repetition
Barmack & Payne (1961)	drinking-driving	experiment with control	possibility of dismissal or psychiatric treatment plus information	fewer accidents

Table 1. Examples of field research (continuation 2)

## 2. Publicity campaigns

### 2.1. General

Publicity campaigns are aimed at direct or indirect improvement of road users' behaviour using messages via the customary (mass) communication media.

These media concentrate on categories of road users. A target group can thus be selected having particular driving or walking habits, higher accident rates or being more susceptible to a specific approach.

A message often presents a specific form of behaviour as desirable. In that case, the same considerations apply as were discussed in regard to the acceptance of road traffic rules (sub-section 1.1.). This means that a publicity campaign may change people's views, for instance, on the efficacy, clarity, attractiveness or social acceptance of specific traffic behaviour and hence may change their behaviour. Other campaigns may be more informative (for instance about regulations and their enforcement) or may aim at changing attitudes to traffic or road safety in particular. This approach is only relevant to road safety if there is ultimately a change in behaviour.

In both cases, a number of aspects concerning the contents and presentation of the messages are deliberately chosen with a view to the desired effect.

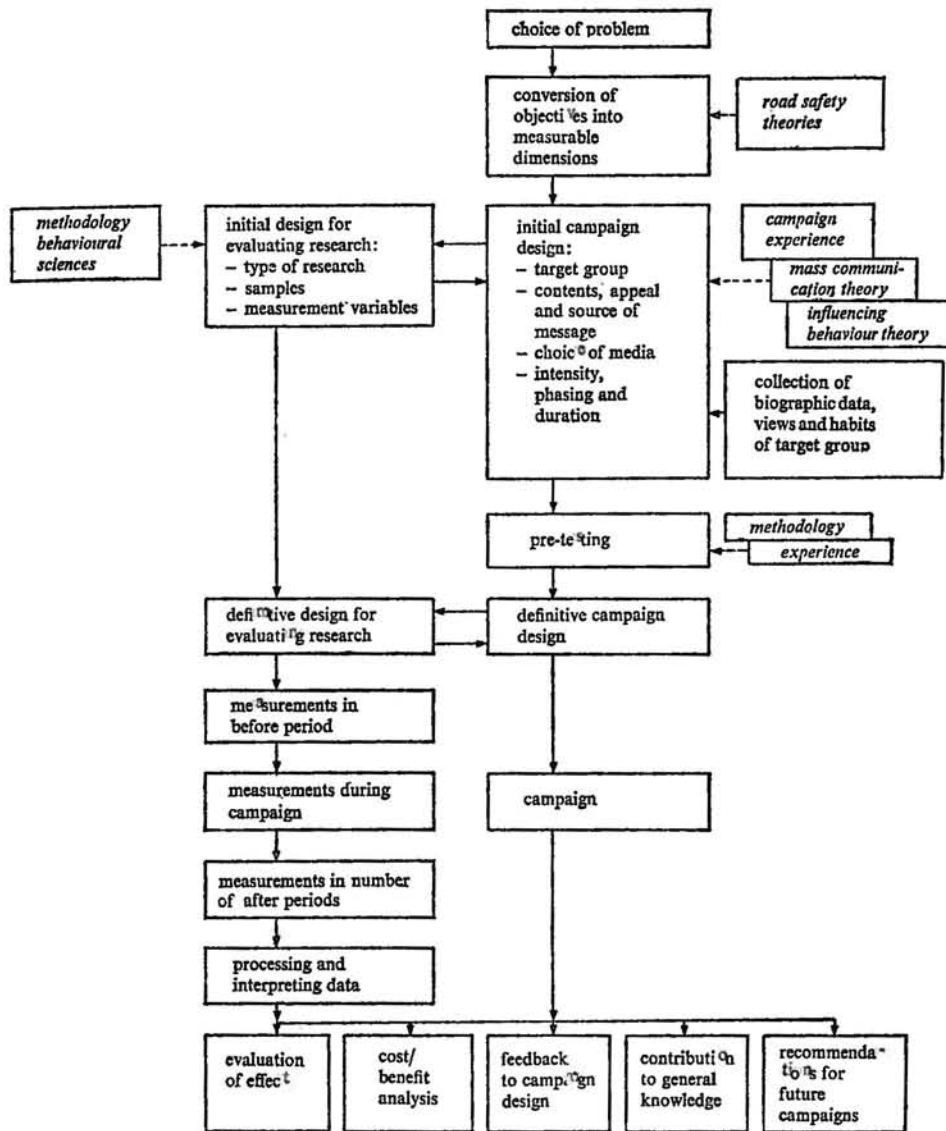
In 1971, the OECD Report on 'Road safety campaigns: Design and evaluation' was published (Wilde, 1971) summing up the state of affairs on this subject. It can be summarised briefly. Until then, little evaluating research had been done, and even part of this was defectively designed. Some campaigns had a favourable effect. These were aimed at among others: the use of low-beam headlights in urban areas, the use of direction indicators, not overtaking, carrying children on the back seat, improved behaviour at intersections and the use of seat belts. The campaigns consisted of press announcements, roadside posters, a range of activities at kindergartens and local television broadcasts.

The common features of these campaigns indicate the following general rules:

- a. the desired behaviour must be clearly indicated; preferably, an example must be given representing the natural situation which can be imitated;
- b. the message should preferably concern behaviour not determined by the situation unless it is possible to present it at the right time and place;
- c. the message must be a personal one; this can be facilitated by attuning it to a limited target group;
- d. if possible, intermediaries or intermediate groups must be enlisted which are able to apply social pressure.

On the whole, it can be said that past campaigns have made little use of existing general expertise and past experience.

The OECD Report also presents a model design for publicity campaigns and the attendant evaluating research. The plan is elaborated and adapted further. This plan is gone into in the next sub-section.



Design for publicity campaigns and attendant evaluating research

## 2.2 The design of publicity campaigns and the attendant evaluating research

The campaign design is preceded by a phase in which a choice is made of the road safety problem to be tackled. Next, road safety theories are used to decide the desired traffic behaviour for solving this problem. The following points are considered in the campaign design:

*Target groups.* The target group can be decided on by the choice of problem or can be selected because of the group's driving or walking habits, their increased accident rates established by a sub-division based on biographical or geographical data, or by the possibility of an approach via specific media or presumed susceptibility to a given approach.

*Contents of the message.* This may include information on the nature and extent of the problem, official regulations, effectiveness and advantages of desired behaviour and degree of its acceptance; it may also encourage the desired behaviour (for instance with examples and advice on the behaviour).

*Appeal of the message.* Examples are: hard, humorous or scientific approach. Finer distinctions are also possible, for instance based on artistic composition.

*Source of the message.* Three types of source can be distinguished: the body requiring the campaign, the organisation carrying it out and the person or group presenting the message.

*Communication media.* These include television, radio, films, posters, folders, press announcements, advertisements, group meetings. In addition persons or groups enlisted as intermediaries can also be regarded as media.

*Intensity, phasing and duration.* Campaigns may differ in overall length, and also in number of messages per unit of time and number of media. In large-scale campaigns the points mentioned earlier may be given a different emphasis at different times so that the campaign can be split into phases. The starting date must also be synchronised with other events.

For design purposes, therefore, information must be collected about the target group: both biographic data and data about their views on the subject and habits concerning desirable and undesirable behaviour.

In order to make evaluating research possible, an initial design for this research must be made together with the initial campaign design. It might be necessary for the campaign objective or design to be adapted somewhat with a view to the possibility of evaluating research. When designing evaluating research the type of research required must be determined (time series with or without comparable groups; campaign group or area chosen at random or not).

It is sometimes possible to use an adjacent area for comparison. In Farmer & Stroh's project (1974) this was done by selecting two isolated communities each with a local TV network. In one, a campaign against drinking-driving was carried out, while the other was used for comparison. In both, drivers' blood alcohol concentrations were measured on the road before, during and after the campaign.

An unusual group was used for comparison by Robertson et al. (1972). Using an experimental local TV network a number of spots on seat belts were shown in half the homes, chosen at random in the research area. Roadside measurements were made to check the use of seat belts and it was ascertained from the registration numbers whether drivers had most likely been able to see the TV spots or not.

A major problem is the choice of the measurement variables. Measuring behaviour in a natural situation, combined with measurements of the presumed processes between publicity campaigns and behaviour modifications (modifications in knowledge and views), are preferable. The choice of extent, location, time and repetitions of random measurements also form part of the evaluating research design.

Before proceeding to the campaign and evaluating research, it is advisable to try out parts of the campaign on a small scale. This cannot give an accurate prediction of the campaign's effect, because this cannot be done for all its parts while a truly natural presentation is precluded. But it may disclose any major divergences between the intention of the message and the way these are experienced. After the campaign and the evaluating research, the effect of the campaign is assessed, a distinction being made between short and long-term effects, if possible plus a cost/benefit analysis.

The results of the evaluating research may contribute towards the general knowledge and experience needed in designing subsequent campaigns. Interim measurements can also be used to adjust the campaign design or be used directly for a message.



## 3. Measures for promoting the use of safety devices

### 3.1. General

Statistics on the use of moped rider's crash helmets and car seat belts in the Netherlands dating from several years ago show very little use of either. The proportion of helmet-wearing moped riders was between 10 and 20 per cent, depending on sex and whether the moped was used in or outside built-up areas. Seat belts showed a still lower percentage of users: about 5 per cent in built-up areas and about 10 per cent outside (if seat-belt using is checked only for cars fitted with them, the proportions are more than doubled).

Wearing crash helmets and using seat belts are behaviour rules. This means that increased use can be aimed at by improving the acceptance of the rule. Greater acceptance can be achieved on the one hand by improving the crash helmet's and belt's characteristics and on the other by publicity. Improvement of the belt's and/or helmet's characteristics can make them more effective and also more attractive to use. Their characteristics can be improved in various ways: by the law of supply and demand, by listing suggested requirements (by a consumer organisation, an inspecting body or the authorities) or by banning the sale or use of unapproved products. Lastly, if use is made compulsory, the threat of punishment for non-compliance also plays a part. Using a seat belt/helmet consists in fact of two steps: the purchase of the equipment, followed by wearing it. Measures can thus concentrate on either step. Those concerning purchase or fitment simplify the next step, its use.

The following sub-sections give examples of efforts to increase the use of seat belts.

### 3.2. Seat belts

#### 3.2.1. Publicity

As far as is known, the effect of past national publicity campaigns to promote the use of seat belts was practically nil (Robertson & Haddon, 1972; Phaner & Hane, 1971). Some carefully planned research projects into the effect of TV and radio publicity also produced no increase (Fleischer, 1972; Robertson et al., 1972). In view of the very many features distinguishable in both campaign and target groups, it cannot simply be concluded that the use of seat belts is unaffected by publicity campaigns. A review by Phaner & Hane (1971) concludes that a long-term campaign concentrating on a small group is likely to have more effect.

An early example of a campaign concentrating on a small group is that the by U.S. Forest Service (Sykes & Newland, 1968), followed by compulsory wearing of seat belts while at work, after which the campaign was concentrated on the use of belts when cars were used for private purposes. An enquiry into the private use of seat belts shows an unprecedentedly high proportion: 60 to 90 per cent (depending on trip length) and a similarly high proportion of fitments: about 70 per cent. The questionnaires were filled in as part of a safety contest, so the figures are undoubtedly inflated.

In Britain, two carefully prepared locally oriented campaigns were examined as to their effects (Morris, 1972; Mackie & Valentine, 1973). In both cases, the use of seat belts doubled during the campaign, followed by a slight decrease afterwards. It is striking that the very different appeals (hard and friendly) produced the same results.

Another way of getting more people to use seat belts is by employing intermediaries. Wilson et al. (1972) report research in which a school programme encouraged parents to use seat belts, via the children. This seems to be a success. But after some time a control group (children's parents in the same class at a different school) also showed increased seat belt using for some inexplicable reason.

In France a campaign was run whose elements were a letter to members of the *Prévention Routière* in a single French department, urging them to propagate seat belt using among their acquaintances and to fix a sticker on their cars stating that the driver was using a belt. Measurements showed a slight increase in the otherwise low proportion of seat belt using (L'Hoste & Labadie, 1973).

*Conclusions.* On the basis of the above examples in different countries, it seems possible to obtain a slight improvement in seat belt using by means of publicity concentrating on small groups. Whether anything else is possible remains an open question as long as the most obvious approach has not been tried: that of approaching motorists via the car trade or driving schools (who are experts in the motorist's eyes) or via business firms.

### 3.2.2. *Fitting of seat belts*

Most countries have required newly registered private cars to be fitted with belts on the front seats as from a specified date. This has been the case in the Netherlands since 1st January 1971. Whether compulsory fitting of seat belts causes more drivers to use them cannot be ascertained with absolute certainty. But this is likely, going by data on seat belt using in the Netherlands, subdivided according to the age of cars (SWOV, 1975). Such a regulation has the optimum effect, if regulations are also issued concerning fitting, adjustability and convenience in use.

### 3.2.3. *Seat belt characteristics*

The effect of seat belt characteristics upon their use has been investigated in connection with the buzzer-light and starter-interlock systems. These systems give a warning or switch off the ignition if the seat belt is not put on.

Most research relates to special categories of drivers. Appleby & Bintz (1972) studied the effect of the buzzer-light system on drivers of cars administered by an automobile club. Ford Motor Company (1973) published results obtained with the buzzer-light system for new car owners who were invited for an interview by the manufacturer (20 per cent response). Cohen & Brown (1973) report on an investigation of both systems in rented cars. In these cases, seat belt using reached 50 to 70 per cent. Ford Motor Company (1973) state that the percentage fell again after several months. Roadside research (Robertson & Haddon, 1972), in which car drivers were compared shortly before and shortly after compulsory introduction of the buzzer-light system, revealed no difference in the using of seat belts. Later research (Robertson, 1974) confirmed this. It also showed that shortly after introduction of the starter-interlock system the proportion of seat-belt users was over 50 per cent, compared with about 25 per cent shortly before introduction. A similar investigation (General Motors

Corporation, 1974) produced a comparable percentage. It is striking that the starter-interlock system must have been disconnected in nearly half the cars. Both these latter investigations were made shortly after the system was introduced. The extent of a permanent effect is therefore unknown. In the meantime, the system has been abandoned again in the U.S.A.

*Conclusions.* It can be assumed that a compulsory reminder system has a temporary impact on seat belt using. Its operation is conditional upon the car driver's readiness to use the belt. Whether this was so in the case of the tested groups is unknown. Other forms of reminder have at least a one-off impact. Examples are posters at a factory gate (L'Hoste, 1972) and a folder placed under windscreen wipers in a car park (Mackie & Valentine, 1973).

#### 3.2.4. *Compulsory use of seat belts*

In Victoria, Australia, the use of seat belts was made compulsory for the first time; the obligation was preceded by a publicity campaign (Vulcan, 1973). Seat belt using then greatly increased to about 70 per cent. After some time, about 80 per cent was measured. But the belts were often worn incorrectly.

About a year later, the use of seat belts was made compulsory in another Australian state (New South Wales). Here, too, figures of 90 to 95 per cent were reached in due course. Even shortly before the operative date there was an increase (Vaughan et al., 1974).

In New Zealand, where belt using was made compulsory a little later, the proportion already reached 85 to 90 per cent almost immediately after introduction (Palmer & Toomath, 1974).

*Conclusions.* Apart from other aspects of the compulsory use of seat belts, compulsion can be said to generate very high user percentages and thus has a major impact on road safety. From the examples it can furthermore be concluded that favourable experience with compulsion in some countries leads to quicker acceptance in countries following the example.

#### 3.2.5. *Position in the Netherlands*

In the Netherlands, voluntary seat belt using for all cars has risen in recent years from about 5 per cent to 10 per cent in built-up areas and from about 10 per cent to 20 per cent outside built-up areas. Where seat belts were fitted, they were used in 1973/74 in built-up areas by 12 to 15 per cent of motorists and outside by 25 to 30 per cent (SWOV, 1975). These are therefore the percentages expected, without further attempts at modification, from the gradual replacement of cars dating from before the compulsory fitting of seat belts.

For comparison with Australia and New Zealand, the following points are of importance:

- objections to compulsion;
- views concerning seat belts;
- the fitting of seat belts (in other words, the size of the category to which compulsion would relate);
- enforcement of the obligation.

In 1970 (prior to the introduction of compulsion in Victoria) about 50 per cent of Australian citizens objected to this (Henderson & Freedman, 1974). Shortly after introduction, the proportion of drivers who had no objection was about 75 per cent (Vulcan, 1973). In the Netherlands about 45 per cent had no objections (ISEO, 1973). Among the 30 per cent of motorists who said they never used a seat belt, this proportion was as low as 10 per cent. (Measurements in 1974 showed little change). About 30 per cent of Dutch motorists believe seat belts to be dangerous in some cases. In Australia and New Zealand, at the time seat belt using was made compulsory, about 70 per cent of cars were fitted with them. In the Netherlands the percentage was about the same.

In Australia and New Zealand, cars are fitted only with three point belts. It is thus easy to see from outside the car whether the belt is being used. In the Netherlands, a proportion of cars are fitted with lap belts, and it is more difficult to check whether these are being used. When using was made compulsory in the Netherlands, therefore, the starting position was somewhat more unfavourable.

Compared with the public attitude in the Netherlands to moped riders' crash helmets, the situation concerning seat belts is unfavourable. Prior to the announcement that wearing of crash helmets would be made compulsory, 70 per cent of Dutch moped riders had no objection (SWOV, 1973). Moreover, practically everyone was convinced of their value.

Furthermore, different age groups are involved; young moped riders experience more pressure from their parents, for instance. It is easy to see whether a crash helmet is being worn (in contrast to seat belts), so that everyone wearing one is an example to those without, and police enforcement is simpler. Since the introduction of the regulations, the proportion of moped riders wearing crash helmets has been practically 100%.

In the mean time, the use of seat belts was made compulsory in the Netherlands on 1st June 1975 for front-seat passengers in private cars registered since 1971.

The proportion of users shortly after the date of introduction for the driver category to which the rule applied was over 80 per cent outside built-up areas and 60 to 70 per cent in built-up areas. It is notable that, in contrast to Australia and New Zealand, the difference between in and outside built-up areas continues to exist in the Netherlands.

Furthermore, in the case of pre-1971 cars fitted with belts, which were not therefore covered by the regulations, there was also a big increase outside built-up areas to over 50 per cent, inside built-up areas to approximately 35 per cent. Whether this was because drivers thought the regulations did apply, or because there was a 'spontaneous' change in behaviour, cannot be ascertained. The total proportion of users, i.e. including cars without belts, was thus about 60 per cent outside built-up areas; it was about 50 per cent inside built-up areas.

Lastly, the available statistics do not show that there has already been an increase in the — then still voluntary — use of seat belts before the operative date (there is rather an indication of a slight decrease). Such an increase could have been regarded as indicating acceptance of the rule.

In the case of moped riders, a substantial increase in the proportion of crash-helmet wearers was already noted some time before the operative date (SWOV, 1975). In

Australia and New Zealand, a similar phenomenon was also noted as regards the use of seat belts.

The most recent data available about seat belt using before the operative date in the Netherlands, however, are from October 1974, while an official publicity campaign was launched in February 1975 and it was also announced in the same month that the operative date was to be 1st June 1975. Therefore it may be possible that seat belt using had in fact already increased shortly before 1st June 1975. There are some indications of this from small samples of observations made in May and June 1975 not forming part of the standard measuring programme.

*Conclusions.* As compared with Australia and New Zealand, the starting position when seat belt using was made compulsory in the Netherlands was somewhat more unfavourable in various respects. The percentages of users after introduction thus show slight differences.

The fact that the proportion of seat-belt users in the Netherlands after compulsion was lower than for crash-helmet wearers has a number of causes. There were fewer objections to crash helmets, there were more favourable views about their value, the age structure was better, behaviour was more easily recognisable (encouraging others to follow the example and facilitating police enforcement).

It is quite possible that seat-belt users percentages will ultimately decline. Provisional results of SWOV measurements in October 1975 point in this direction.

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