

Negative emotions and aggression in traffic

Summary

Negative emotions like anger and frustration occur in daily traffic and can give rise to aggressive behaviour. The occurrence of both emotions and aggression in traffic depends on personal and situational aspects. Objectively determining what aggressive behaviour is proves to be quite difficult, as much depends on individual interpretation. Behaviour which is not actually intended to be aggressive, can still be experienced as aggressive by a fellow road user and, subsequently, give rise to an aggressive reaction. Negative emotions are related to aggression and risky driving behaviour: motorists who get angry while driving often drive more aggressively and are more often involved in near-misses. Various measures in the areas of education, engineering and enforcement could tackle the problem of aggression for road safety. However, no research has been done into the effects of those measures.

Background and content

Many people experience driver aggression as a problem (Barten et al., 2006). Recent research shows that people experience aggression as a greater problem than traffic jams (Zandvliet, 2009). The media also frequently pays attention to cases of excessive aggression in traffic. But what does driver aggression exactly entail? Since driver aggression is closely related to negative emotions such as anger and frustration, this fact sheet discusses both driver aggression and emotions in traffic. What are its characteristics and what causes it? Can anything be said about the effect on road safety and the extent of the problem? And finally, can any measures be identified to tackle the problem?

What is emotion?

Since driver aggression is often caused by (negative) emotions, the concept emotion will also be explained in more detail. Emotion is a phenomenon that is difficult to define; however, most researchers agree that the following elements are essential:

- Emotion is a mental state that is clearly distinguished from other conditions, e.g. fatigue; emotions are usually accompanied by physical changes, facial expressions or actions.
- Emotion occurs when a personal interest is either damaged (negative emotion, for example anger), or encouraged (positive emotion, for example happiness).
- Emotion is accompanied by an inclination to undertake action.

The terms emotion and mood are often used interchangeably. However, there are differences between the two concepts. In general, emotion is seen as a relatively short-lived state of mind with a clear object: one is angry with someone, sad about something, afraid of something, et cetera. Moods often last longer than emotions and are usually not aimed at a particular object or event. These are more general feelings of e.g. (dis)comfort, anxiety, or irritation.

What is driver aggression?

A large number of authors have already established that there is no general definition of driver aggression, and therefore many different descriptions are used (see for example Dula & Geller, 2003). In many of these descriptions, the following aspects are found:

- behaviour that may cause physical or emotional harm to a fellow road user;
- behaviour that consists of a violation or otherwise exceeds moral standards.

The lack of a general definition mainly stems from disagreement on the motivation of behaviour; to what extent the behaviour is malicious, to what extent the behaviour is really intended to harm another person, and to what extent the behaviour is caused by negative emotions (for example anger or frustration). Moreover, the term 'road rage' is sometimes used as a synonym for driver aggression and is sometimes considered to be an individual concept, involving violent behaviour that is intended to cause direct damage to the other person.

What is the relation between negative emotions and aggression in traffic?

Up till now, research into emotions in traffic has mainly focussed on anger in traffic and the subsequent aggression. In a study that used the Driving Anger Scale (DAS), a connection was made between anger on the one hand and aggression and risky driving behaviour on the other hand (Deffenbacher et al., 1994). 'Driving anger' is defined as the tendency to react angrily to frustrating events, specifically in the context of traffic. This study has shown that motorists who have the tendency to get angry behind the wheel drive aggressively and dangerously more often and are more frequently involved in near-misses. Other studies also found connections between trait anger and (aggressive) violations (Nesbit, Conger & Conger, 2007), and between aggression and near-misses and crashes (King & Parker, 2008).

In what forms is aggression expressed?

Psychology often distinguishes between two types of aggression: hostile aggression and instrumental aggression (see for example Bushman & Anderson, 2001; Levelt, 1997). Hostile aggression, which originates from anger, makes the offender feel the need to harm another person. This can be expressed by making obscene gestures, cursing, hitting the car, quickly overtaking again, tailgating, and cutting in on someone. Instrumental aggression, on the other hand, is especially aimed at achieving individual goals, for example reaching the destination without delay. In this case, the aggressive behaviour could consist of the violation of formal and informal traffic rules, and, as a side effect, the violation of other road users' interests. Examples are speeding, red light running, tailgating and honking. Instrumental aggression is much more diverse in its forms of expression than hostile aggression; every type of behaviour that violates other road user's interests or exceeds moral standards can be an expression of instrumental aggression if it was deliberate. Moreover, behaviour that unintentionally violates other road user's interests or exceeds moral standards can be seen as deliberate by another person, and can thus be experienced as aggressive. Therefore, instrumental aggression can also cause hostile aggression in fellow road users.

What causes emotions in traffic?

Emotions in traffic are caused by both personal and situational factors. First of all, there are individual differences in the extent to which someone tends to react emotionally, and this is also the case in traffic. People who tend to react angrily or aggressively in general, more often report anger and also rage in traffic. Individuals rating high on Attention Deficiency Hyperactivity Disorder (ADHD) are also more often angry in traffic than people with a low rating. Emotions in traffic can be evoked by the situation preceding traffic participation as well as by the situation during traffic participation. The cause, incidentally, differs per emotion. For example, happiness is usually caused by an event that has nothing to do with the traffic situation, whereas the cause of amazement, anger and fear often is related to traffic.

What is the cause of driver aggression?

Driver aggression, too, can be caused by personal and situational factors as well as by the traffic situation. Various studies indicate that anger and aggressive behaviour in traffic decreases as one grows older, that men show (physically) aggressive behaviour more frequently than women, and that people who tend to get angry, are also quick to show aggressive behaviour in traffic (see for an overview Mesken, 2006). Also, persons with an obsessive passion for driving show aggressive driving behaviour more frequently (Philippe et al, 2009). Concerning the traffic situation, driver aggression is often said to get stronger in situations where the own interests are prejudiced and frustration arises: the so-called frustration-aggression theory (Dollard et al., 1939). Typical situations include traffic jams, red light delays, or violations committed by others that cause inconvenience. Finally, anonymity and motorists' lack of direct communication opportunities have also been found to contribute to driver aggression.

How frequent do emotions and aggression occur in traffic?

Research shows that some emotions are more frequent than others. Happiness, anger and anxiety seem to occur relatively often (Levelt, 2003; Mesken, 2006; Mesken et al., 2007). The method that is used to determine the prevalence of emotions in traffic has, however, been shown to influence the type and frequency of the emotions that are reported. Anxiety has been found to be reported more frequently in interviews while driving than in questionnaire studies.

The prevalence of driver aggression is hard to determine objectively. This can be largely explained by the fact that certain behaviours in traffic are not experienced as equally aggressive by everyone. In the

biennial Periodic Regional Road Safety Survey ([PRRSS](#)) respondents indicate how they usually respond to dangerous behaviour of others. Nearly three-quarters of the respondents indicated being annoyed by dangerous behaviour of other road users, but that annoyance is usually not expressed visibly. Yet, 14% indicate expressing their anger through gestures, light signals or honking. Furthermore, respondents are found to experience driver aggression as a relatively large problem compared to traffic jams, parking problems, road safety and bad accessibility (Zandvliet, 2009).

Police reports provide another indication. Based on the available data, a rough estimate was made of the national situation which resulted in 4,000 to 5,000 people annually reporting incidents of violence against strangers in traffic to the police (Terlouw et al., 1999).

What are the consequences of (negative) emotions and driver aggression for road safety?

Although it cannot immediately be determined how often driver aggression causes a crash, it is quite plausible that negative emotions and driver aggression have a negative effect on road safety (for an overview, see Mesken, Hagenzieker & Rothengatter, 2008). Questionnaire studies in particular show a relation between, on the one hand, the inclination to react angrily and driver aggression, and near-misses and crashes and unsafe acts in traffic, on the other (for example speeding and tailgating; see for an overview Mesken et al., 2007). These acts, which can be an expression of driver aggression, are known to increase the risk of crashes (for example Aarts & Van Schagen, 2006; Evans & Wasielewski, 1982). However, there is a two-sided explanation for the relation between aggression and danger in traffic: on the one hand, one may be involved in more near-misses and crashes when one is upset or behaves aggressively (possibly because of a more dangerous driving style); on the other hand, these near-misses themselves may be the cause of anger and aggression. According to an American study, aggressive driving behaviour plays a role in more than half of all fatal crashes (AAA, 2009). However, in this study aggressive driving behaviour was defined very broadly: for example, not indicating direction and ignoring traffic signs were also included.

Do emotions and aggression also play a part in Sustainable Safety?

The Sustainable Safety road safety vision is based on five principles. These five principles are the functionality of roads, the homogeneity of mass and/or speed and direction, physical and social forgivingness, the predictability of roads and behaviour, and, finally, state awareness (see SWOV Fact sheet [Background of the five Sustainable Safety principles](#)). Emotions and aggression are likely to play a part in a number of these principles.

The social aspect of the forgivingness principle indicates, for example, the importance of anticipating the behaviour of other road users and the willingness to compensate for the mistakes of others. Especially this willingness affects the way in which the deviant behaviour of a road user is interpreted. Does one interpret the deviant behaviour as aggressive or as an unintended error? Research has indicated that trait anger can predict the inclination to interpret the behaviour of another individual as hostile and aggressive (King & Parker, 2008). This personal emotion in combination with seeing the other as a determined offender can decrease the willingness to compensate. The opposite, being more prepared to compensate if the other's behaviour is considered unintentional, is also possible. In other words, social forgivingness not only involves the willingness to compensate for others, but also involves the ability to recognise the intentions of others (Houtenbos, 2009; see also SWOV Fact sheet [Social Forgivingness](#)).

It is conceivable that emotions and aggression also play a part in the principle state awareness. State awareness concerns the ability of road users to estimate their task capability. Based on this estimate, one can adjust one's behaviour to the difficulty of the task. As soon as a situation is experienced as complicated and dangerous, one can, for example, decide to reduce speed (see SWOV Fact sheet [State awareness, risk awareness and calibration](#)). Research has shown that anger can lead to, amongst others, a lowered risk perception (Mesken et al., 2007). Anxiety can also affect risk perception.

Finally, emotions and driver aggression can also have consequences for the homogeneity. Research has indicated that anger can lead to a higher speed and that an annoying event can lead to immediate acceleration (for example McGarva & Steiner, 2000). Differences in speed between vehicles lower the homogeneity of the traffic flow and are therefore undesirable from the Sustainable Safety point of view.

Which measures can be taken?

Despite the lack of clarity about the exact size of the problem and the exact consequences for road safety, there are various initiatives that aim at reducing driver aggression. At present, the Ministry of Infrastructure and the Environment is working on a Strategy Memorandum Driver Aggression. The measures can best be divided in the three areas 'Education', 'Engineering' and 'Enforcement'.

Education

Concerning education, there are various initiatives which are concerned with aspects that are relevant for driver aggression, even though they are aimed more at the driving style in general (e.g. *Effe chillen, Rij met je hart, Think*). Other educative measures vary from courses focusing on managing (extreme) anger to courses providing information on the influence of emotions and aggression on driving behaviour and the effect that one's own deviant behaviour can have on the driving behaviour of others. A course that focuses on dealing with anger is, for example, described in Ross & Antonowicz (2004) and also in Belgium such a course is given (Felix et al., 2000). Since October 2008, the Educational Measure Behaviour and Traffic (EMG) has been used in the Netherlands; see also SWOV Fact sheet [Rehabilitation courses for road users](#). It is important to realise that it will be hard to prevent people from experiencing emotions, because these are mainly determined by individual factors. However, information and courses can be used to try to change the way in which emotions are expressed.

Engineering

Also in the area of engineering, various initiatives are possible that can help to push back driver aggression. Measures can be found in the prevention of situations in which interests of road users are hindered, for example by trying to reduce traffic jams or by trying to shorten the waiting time for red lights, and by informing motorists about delays. Information technology can also contribute to the decreasing the number of traffic situations that can cause anger or aggression. For example, the behaviour of road users can be homogenized by intelligent speed limiters or intelligent cruise control.

Enforcement

Finally, enforcement remains important to tackle the excessive cases of driver aggression. However, the law does not know the term 'aggressive driving behaviour'. Hence, an individual in the Netherlands cannot be fined for aggressive driving. However, aggressive driving behaviour can be tackled under article 5 of the Road Traffic Act. This act states that it is forbidden to "act in such a way that menace on the road is caused or can be caused, or that road traffic is hindered or can be hindered". Enforcement is possible on specific expressions of driver aggression, such as major speeding offences and tailgating. This, of course, is already being done. Since a few years, tailgating rules have been actively enforced using regular surveillances with inconspicuous video cars, and, on state roads, also with automatic video control systems.

Since not everyone is inclined to express emotions or driver aggression to the same extent, it may help to target measures at different groups. A possible distinction is to be made between the small group of 'louts' and the larger group of people who show 'loutish behaviour' less often. Other possibilities are distinguishing between different age groups, genders or trait anger. The effect of the above measures, for that matter, is not systematically evaluated everywhere.

Conclusion

Many different studies (especially questionnaire studies) have already indicated a relation between negative emotions (in particular anger) and various dangerous behaviours in traffic. However, little is still known about the magnitude of the problem for road safety. Different expressions of driver aggression that can be caused by negative emotions, for example speeding or tailgating, have been shown to negatively affect road safety.

There are various measures in the area of education, engineering and enforcement, which could tackle the problem of aggression for road safety. However, the effects of those measures remain unknown.

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