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SWOV Fact sheet

Subjective safety in traffic

Summary

The term 'subjective safety in traffic' refers to people *feeling unsafe* in traffic or, more generally, to *anxiety* regarding being unsafe in traffic for oneself and/or others. Subjective safety in traffic can lead to road users limiting their mobility and social activities, which is one of the reasons it warrants policy-related attention. However, research has shown that, at most, there is a weak link between objective and subjective safety in traffic. There are even indications that some subjective feeling of being unsafe induces more alert/safer behaviour.

Background and content

In recent years, subjective safety in traffic has increasingly gained interest in the Netherlands, not only with regard to (municipal) policy, but also regarding traffic law enforcement and traffic education. This fact sheet defines the term subjective safety in traffic. The relationship between feeling unsafe and objective road safety will also be described. Subjective safety in traffic is closely related to many other concepts such as risk perception, risk awareness, and risk acceptance. Although some of these terms will be dealt with in brief, the scope of a fact sheet does not allow us to do so in depth. Nor will this fact sheet discuss the subject of 'social insecurity'. Social insecurity is defined as the fear of crime. However, social insecurity may affect the effectiveness of road safety measures. For example, to prevent crashes, a tunnel for cyclists may be constructed which prevents cyclists having to cross a busy main road. If many cyclists, however, are afraid to use the tunnel in the dark because they do not feel safe, the tunnel's contribution to road safety is less than was expected earlier.

This fact sheet is based on a 2008 SWOV literature study on the subject, entitled *Perception of lack of traffic safety; An exploration of subjective safety* (Vlakveld et al., 2008).

What is subjective safety in traffic?

The term 'subjective safety in traffic' refers to the personal feelings of being unsafe in traffic experienced by people, or, more generally, to the anxiety regarding hazardous traffic situations for themselves and/or others. This feeling of not being safe in traffic is caused by personal experiences or observations in traffic, contact with other people, and/or information gained from the media.

Subjective safety in traffic can relate to either place or time. For instance, it can occur when someone feels unsafe while participating in traffic. Subjective safety can also be independent of place and time; in such cases the feelings of being unsafe are more general. *Table 1* shows a few examples.

	Related to location	Unrelated to location
Related to time	Feeling unsafe when crossing a busy street	Being afraid to drive at night
Unrelated to time	Anxious about unsafe traffic conditions in the district	Anxiety about unsafe traffic conditions in general

Table 1. *Examples of specific and general subjective safety in traffic.*

Which traffic features affect subjective safety in traffic?

Dutch research indicates that feelings of being unsafe arise particularly if many people commit speeding offences and, in 30 km/h areas, if there is much motorized traffic (Miedema et al., 1987; Plasmans & Tuinenburg, 2006). Furthermore, Van Haaf (2002) states that feelings of being unsafe are stronger when the types of traffic are not separated, if there is relatively much heavy traffic, and when traffic situations are difficult to oversee. Dobbenberg & List (2007) also found that the degree to which people feel safe is related to the separation of types of traffic and the share of heavy traffic. However, they found no connection between the transparency of the situation and the feeling of being unsafe in

traffic. Foreign research also found that the amount of traffic, its speeds, the presence or absence of heavy traffic, and the transparency of traffic situations affect subjective safety in traffic (Sørensen & Mosslemi, 2009).

Which personal factors affect subjective safety in traffic?

The role of subjective safety in traffic varies considerably for different road users. There are road users who feel little or no fear, and even need a certain degree of tension and excitement to feel happy in traffic. They are the so-called sensation-seekers. There are also people for whom the mere idea of participating in traffic generates so much fear that they give it up entirely. These are people with a serious fear of driving. Most people are somewhere between these two extremes.

What is the relationship between objective and subjective safety in traffic?

Research has shown that at most there is a weak positive relationship between objective and subjective safety. This means that the situations people consider to be hazardous are generally not those in which many crashes do indeed occur. In the most extensive – albeit somewhat older – Dutch study regarding the perception of the residential environment, objective information (speed, road features, number of crashes) was gathered on 48 streets in three towns. Per street an average of 26 residents filled in a questionnaire with questions about their subjective assessment of road safety (Miedema et al., 1987; 1988; Menkehorst et al., 1990). It showed that only half of the objectively hazardous situations were also subjectively considered to be hazardous. In other words, half of the actually hazardous situations were also considered by the residents to be hazardous, the other half were not. The reverse also applied; half of the situations considered to be hazardous by residents, were not hazardous from an objective point of view. In areas other than road safety, e.g. crime, at best only a weak link between objective and subjective safety is observed (Nilsen et al., 2004).

Why is there only a weak relationship between objective and subjective safety in traffic?

Various reasons can be put forward for the at most weak positive link between objective and subjective safety.

1. there are indications that road users are extra careful in situations which they consider to be unsafe and adapt their behaviour in such a way that it becomes safer from an objective point of view (Menkehorst et al., 1987, Summala & Näätänen, 1988; Fuller, 2008). Such locations become objectively safer precisely because people feel unsafe.
2. It is possible that people avoid subjectively hazardous situations, for instance by choosing a different route, travelling at a different time, or by choosing a different mode of transport. In the most extreme cases, it could even lead to people no longer travelling (independently). In this case, subjective safety affects the freedom of movement, which is generally regarded as undesirable. It will, however, benefit the objective safety at those locations, as the amount of traffic will be reduced, and therefore also the number of crashes.
3. It is possible that a research or intervention effect may occur: information regarding research and interventions leads to road users and residents being more informed about a problem, which can result in more complaints about hazards instead of fewer, even when safety measures have been taken. This actually appears to happen in practice (Janssen & Kraaij, 1984; Pagen & Hartevelde, 2006).

What is the size of the problem of feeling unsafe in traffic?

In the Netherlands, no national data is available about the degree to which people feel unsafe in traffic. Provincial and municipal road authorities, on the other hand, increasingly investigate the feelings of being unsafe in traffic, as well as the feelings connected with specific roads or locations. However, these studies are always done in a slightly different manner, so that the results cannot be compared, and no national picture emerges. Subjective safety in traffic is a broad concept that has many forms and purposes, and which can therefore be measured in many different ways. There is absolutely no quantitative data, neither national nor regional/municipal about how or how often people allow their feelings of being unsafe in traffic to affect their mobility or their behaviour in traffic.

What attention does subjective safety in traffic receive in the Netherlands?

In recent years, subjective safety in traffic has gained increasing interest, not only in (municipal) policy, but also in traffic enforcement and traffic education in the Netherlands. This is focused on location-specific and sometimes also time-specific feelings of being unsafe in traffic (see *Table 1*). General feelings of being unsafe in traffic, such as the fear of driving, are more difficult to influence with the aid of measures. Here are some examples:

Municipal policy

Municipalities want to give subjective safety in traffic a more significant place in their policies. For example, a number of policy monitors ask residents questions about how safe they feel in traffic in their residential area. Municipalities also pay attention to subjective safety in public participation procedures, community work, and in the evaluation of traffic projects (Kessels, 2005).

Traffic law enforcement

Since 2005, regional traffic enforcement teams in the Netherlands have also been deployed at locations where residents complain about road safety. In advance, the complaints are analysed, the road safety perception is assessed, and violation behaviour is examined. Based on objective data about both the road layout and violation behaviour, it is then decided whether or not to apply enforcement (Plasmans & Tuinenburg, 2006; Van Bruggen, 2007).

Inventory of bottlenecks

Road users are increasingly asked for their opinions on how they perceive safety in traffic situations. An example is the so-called road impression enquiry (ANWB, 2004; 2005; 2006) in which drivers indicate how they have perceived the road and its surroundings during a journey. Based on this, the situations found to be ambiguous are indicated, and, consequently, at which of these situations safety could actually be compromised.

Other examples can be found in the area of traffic education, such as projects in which children specify the locations along their route to and from school that they perceive as unsafe (see Vlakveld et al., 2008). There are also national, regional and municipal reporting centres where, among other things, hazardous traffic situations can be reported, such as the ANWB bicycle-route reporting centre, the Reporting Centre for Traffic Hazards Zeeland, and the Reporting Centre for High Risk Traffic Situations in The Hague.

Is improving subjective safety in traffic important?

The question of whether improving subjective safety in traffic is important depends on the ultimate objective:

1. If the objective is the reduction of the number of road casualties, then improving subjective safety in traffic is hardly important. Firstly, there is at most only a weak link between situations that are perceived as unsafe and situations that are actually unsafe in terms of road casualties. Secondly, there is a chance that if people feel too safe, they will be less attentive to possible problems and behave less safely.
2. If the objective is to use feelings of being unsafe as an indicator for possible dormant road safety hazards, it is important to assess the validity of these complaints and signals. It needs to be scientifically established that these facts lead to a reduction of safety and the measures that are taken must effectively deal with the facts, not the feelings. Facts that have been established to be the cause of more casualties (e.g. drink-driving) are called Safety Performance Indicators (SPIs) (Hakkert et al., 2007). In practice these conditions are not always met. For example: A municipalities report on subjective safety which is placed on the internet states that cyclists feel unsafe on a certain roundabout. On this roundabout cyclists do not have priority. The report proposes giving the cyclists priority from that moment onward. It may be the case that cyclists have a somewhat unsafe feeling on roundabouts, but that roundabouts are safer for cyclists than intersections and roundabouts where cyclists do not have priority are somewhat safer than those where cyclists do have priority (see SWOV Fact sheet [Roundabouts](#)). In this example the feelings have not been assessed for factuality and a measure is proposed that will in all probability result in a higher number of casualties.
3. If the objective is to make people feel at ease in their living environment, and to prevent them from feeling that their own mobility or that of others is impeded by feelings of being unsafe in traffic, then improving subjective safety is important. However, care must be taken that the objective safety in traffic does not decrease if the subjective safety in traffic improves.

The situation where people continue to feel unsafe in spite of one or more road safety measures having been taken is of a different order. It is important to pay attention to these subjective feelings, and to try to steer them in a positive direction, for instance by using extra information or communication. This can contribute to acceptance of these (and other) measures, and, consequently, also to their effectiveness (Vlakveld et al., 2008).

The most desirable situation is probably to devote attention to both objective and subjective safety in traffic – each with a different objective in mind. *Table 2* shows the situations that arise when little or much attention is paid to objective and subjective safety in traffic. When both objective and subjective safety in traffic have low priority, it is obvious that feeling unsafe in traffic is deemed to be unimportant (situation 1). When attention to subjective safety in traffic is at the cost of attention to objective safety in traffic, ‘pleasing’ people has become more important than protecting them (situation 2). When only the objective casualty statistics are taken into account, there is little consideration for people’s feelings (situation 3). The ideal picture is that a lot of attention is paid to both objective and subjective safety (situation 4). However, practice and the ideal situation are difficult to combine. As mentioned previously, road user behaviour to a large extent determines how safe a situation is. At the same time, the feeling of safety determines the behaviour of road users. Feeling safe can lead to less safe behaviour, and feeling unsafe to safer behaviour.

		Attention paid to objective safety in traffic	
		Little	Much
Attention paid to subjective safety in traffic	Little	1. Feeling unsafe in traffic is not important	3. Safety in traffic is important, but there is no consideration for feelings of being unsafe
	Much	2. Pleasing is more important than protecting	4. Desirable situation, but is it possible?

Table 2. *Different situations with little or much attention being paid to subjective and objective safety in traffic (Vlakveld, 2009).*

Conclusion

Subjective safety in traffic is increasingly considered important in the Netherlands; especially at municipal level, but also at a regional and national level, and with regard to enforcement activities. This is, for example, illustrated by the increasing number of initiatives. These are sometimes brought about with the wellbeing of people in mind, generated by the idea that feeling unsafe in traffic limits people’s freedom of movement, and sometimes also by political motives. The resulting actions will only have a limited effect on the objective safety in traffic, i.e. on the number of road casualties, as there is at most a slight positive relationship between subjective and objective safety. There are even indications that a certain degree of feeling unsafe can induce more alert/safe behaviour in people. A quantitatively substantiated picture of the degree to which people feel unsafe in different traffic situations is lacking. Neither is the effect of subjective feelings of being unsafe on road user behaviour and mobility supported by statistics. Such corroboration would contribute towards a better understanding of the importance of subjective safety in traffic with regard to policy.

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