Perception of other drivers' errors and violations and easiness of error detection.

L. Åberg, Gunilla Afram and Marie Nilsson

Dalarna university, Borlänge, Sweden
lab@du.se

In many studies persons have been found to have biased perceptions of other persons' behaviour. In traffic strongly biased perceptions of others violations have been observed. One possible reason for this bias might be easiness of detection. If an error is very easy to observe its bias of perception should be less than for more covert errors. The items of the Swedish version of the DBQ-SWE (Åberg & Rimmö, 1998) were reformulated in order to investigate drivers' perceptions of other drivers' behaviour. The questionnaire was administered on a group of 127 persons. Perceptions of others' errors and violations were compared to self reports of DBQ-errors and violations. Also the items were characterised as more or less difficult to observe. The result reveals a strong overestimation of others behaviours. The size of bias over items will be related to easiness of detection. Any result will be related to theories about driver behaviour and consequences for measures to influence drivers' behaviour will be discussed.

Keywords: DBQ, Error, Violation, others' behaviour

When asked about the reasons for speeding many drivers claim that they want to behave like others do and that they want to follow the rhythm of traffic (e.g. Haglund, 2001). It has also been found, in several investigations, that drivers tend to overestimate other drivers' errors and violations, for example speeding (Manstead, Parker, Strading, Reason & Baxter, 1992; Åberg, Larsen, Glad & Beilinsson, 1997; Haglund & Åberg, 2000).

In the studies by Åberg et al., 1997 and in Haglund and Åberg, 2000, speeds of passing vehicles were measured along the road in urban areas and the drivers were stopped by police and interviewed by researchers. The results, summarised in Table 1, indicate that drivers' had a valid perception of their own speed while they overestimated the percentage of other drivers speeding. Most drivers in daily driving can observe their own and others' speed behaviour as speeding is a common violation and easy to observe. Therefore, it could be expected that drivers have a reasonably correct view of own and others speeding frequency.

When asked how fast they drive compared to others the drivers interviewed stated that they normally drive at the same speed or slower than others. Only 12% admitted that they drive faster than other drivers (Haglund and Åberg, 2000). In one situation it is relatively easy to observe speed differences between vehicles and that is in overtaking manoeuvres. At least drivers can be expected to have an opinion about how often they are overtaken compared to how often they overtake others. According to our results 60 % of the drivers think that they are overtaken more often than they overtake themselves and only 6 % they overtake more often (Åberg, et al, 1997).

Table 1. Results from three different studies of observed speed and road side interviews about drivers' perceptions of others speed.

Country	Sweden	Denmark	Sweden
Speed Limit	50km/h	50km/h	90km/h
Number of Subjects	N=532	N=409	N=684
Mean Observed Speed	52km/h	53km/h	91km/h
Percentage 10km/h over limit	16%	23%	23%
Mean Self-reported Speed	51km/h	53km/h	90km/h
Estimated Percentage 10km/h over limit	53%	55%	57%
Estimated Mean Speed	61km/h	64km/h	57%

Many studies report that people have biased perceptions of other persons' behaviour (Ross, Green and House, 1976). Also in traffic strongly biased perceptions of others' violations have been observed (e.g. Åberg, 2005). One possible reason for this bias might be easiness of detection. If an error is very easy to observe its bias of perception should be less than for more covert errors. A Swedish version of the Manchester DBQ was administered to a large sample of drivers (Åberg & Rimmö, 1998) and 32 items measuring a four different factors of aberrant driver behaviour was obtained in a factor analysis. The Swedish version of the DBQ-SWE measures violations, errors of attention, mistakes and errors because of deficient driving experience. In Figure 1 the tendencies observed in aberrant behaviour for different genders and ages are presented. It can be observed that violations and mistakes are more frequent among males and decline with increasing age. Inattention on the other hand increases with age and experience and gender. Females make many errors because of inexperience (they have not been driving frequently since they got their licence). The different errors described in how easy they are to observe by an external observer. Violations, like speeding or driving against a red light, are easy to detect while errors like missing a road sign or forgetting the gear are more difficult to observe. Also some of the errors like violations may be considered to be more negatively evaluated than less serious errors like inattention. In the present study perceptions of other drivers' aberrant behaviour will be compared to results presented by Åberg and Rimmö (1998) concerning perceived own behaviour of drivers. In the comparison differences in between different categories of aberrant behaviour and visibility of errors will be considered.

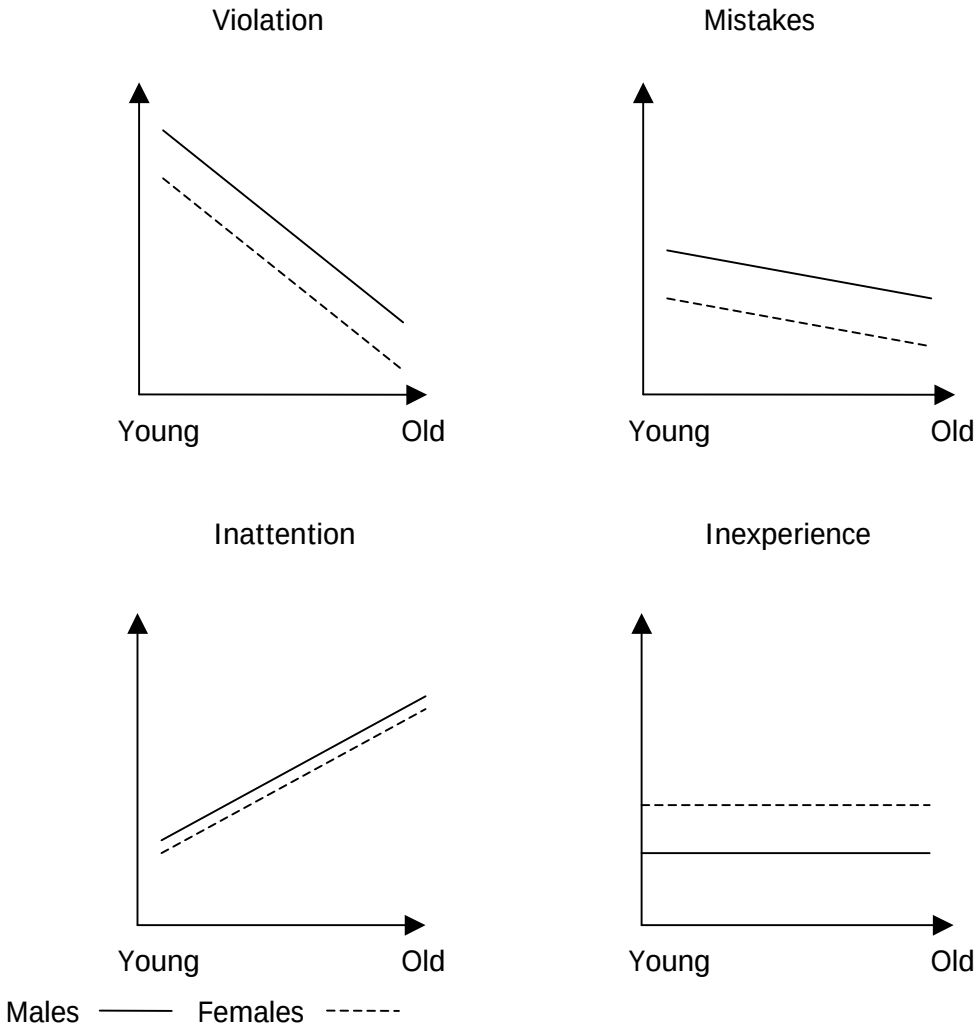

Figure 1. A view, in principal, of differences due to age and gender between found in the Åberg and Rimmö (1998) study.

Method

In the present study the 32 items were reformulated in order to investigate drivers' perceptions of other drivers' behaviour. In DBQ-SWE the subjects were presented a description of a behaviour and asked to indicate on a six point scale how often they committed the behaviour. In the new questionnaire the subjects were asked to indicate on a six point scale: "How often during the last two years have you perceived other drivers do the following?"

The questionnaire was administered on a group of 127 persons, 61% females and 39% males, in Borlänge, Sweden. Mean age of participants was 36 years.

Results

In Table 2. the perceptions of others' errors and violations in the present sample are compared to self reports of DBQ-errors and violations from the Åberg and Rimmö (1998) Study.

Table 2. Perceived aberrant behaviour of others (present study) and in self-reports (Åberg & Rimmö, 1998. On a scale from 1 = never to 6 = very often. Abbreviated DBQ-SWE item descriptions.

	Others' behaviour N = 127	Own Behaviour N = 1830
Violation:		
Speeding when overtaking	5,22	4,30
Speeding to follow flow	4,72	3,85
Speeding at low traffic	4,85	3,73
Speed up at lights	4,41	3,25
Illegal parking, no legal place	3,28	2,28
Illegal parking, short errand	3,97	2,14
Driving close to other	3,74	1,71
Overtake someone slowing down	3,60	1,67
Mistake:		
Misjudge road surface	3,13	2,11
Underestimate speed of oncoming	3,10	1,91
Misjudge speed exiting	2,79	1,78
Misjudge gap when overtaking	3,20	1,76
Turn in path of oncoming	2,51	1,59
Cut bends	2,92	1,48
Misjudge gap to oncoming	2,29	1,40
Enter in front of other	2,55	1,25
Inattention:		
Miss sign, got lost	2,93	2,44
Uncertain at big parking lot	2,98	2,21
Driving to unintended destination	2,44	1,99
Miss signal turning green	2,92	1,93
Miss exit	2,57	1,91
Not noticing green arrow	2,69	1,87
Not noticing new signs	2,47	1,69
Fail to notice sign	1,70	1,39
Inexperience:		
Forget to dip lights	3,98	2,38
Forget gear, check with hand	2,67	2,06
Forget loosing p-brake	2,29	1,81
Too low gear	2,64	1,79
Shift into wrong gear	2,56	1,76
Try to shift into higher gear	2,18	1,76
Wrong gear reversing	2,32	1,71
Wrong switch	2,43	1,55

(All pairwise differences between means are significant, $p<0,001$)

According to the DBQ-SWE errors presented in Table 2 other drivers are believed to commit errors to a greater extent than the drivers themselves. Among the errors violations are most common Other drivers are believed to violate the rules sometimes to often (mean: 4.22) and drivers themselves rather seldom to sometimes (mean: 2.87). The means for mistakes are 2.81 and 1.66 respectively, Inattention, 2.59 and 1.93, respectively and inexpereience, 2.63 and 1.85, respectively. Among the violations speeding when overtaking is the most frequent error both for the drivers themselves and for their beliefs about other drivers. Among the other categories of error the drivers admit that they forget to dip the head lights quite often and others are also believed to do so. In Figure 2 the means of own errors from the Åberg Rimmö (1998) study are plotted against means of others' errors in the present survey.

From Figure 2 is clear that in all cases the subjects in the present study perceive others errors to make more errors than the subjects from the Åberg and Rimmö (1998) study. The correlation coefficient calculated between means of own and others estimated behaviour is 0.86. As some of the means of violations (own and others') are more extreme than other errors violations were excluded from the analysis. However, even after exclusion of violations the correlation is quite high, 0.62.

Some errors are believed to be easier for other drivers to detect than other errors, for example, it is easy to detect when another driver have forgotten to dip the headlight while it is almost impossible to observe have check the current gear with the hand. A rough categorization of visibility of errors into three groups was made with "High visibility" (Deliberate speeding, illegal parking, forget lights, etc.), "Medium visibility" (fail to notice green light, misjudge speed at exit, etc.), and "Low visibility" (forget parking brake, miss exit, etc.). Figure 3 shows plotted errors classified by visibility.

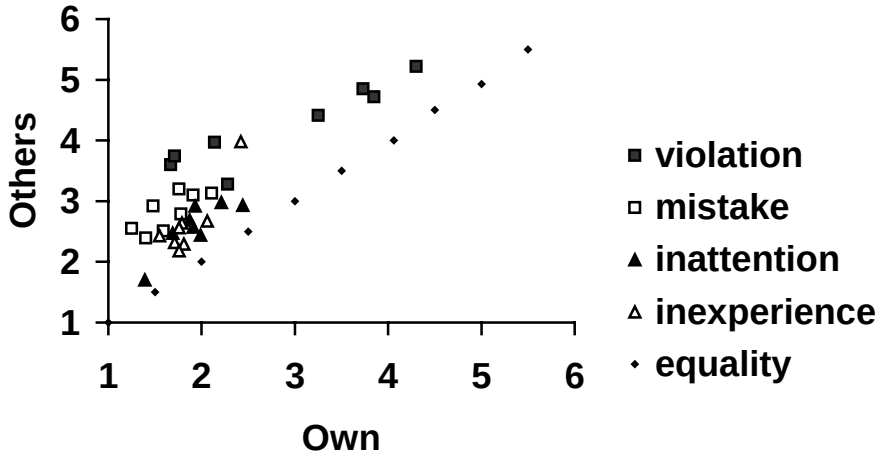

Figure 2. Perceived own compared to others' aberrant behaviour in driving, for different kind of errors. The scales varies from 1 = never to 6 = very often.

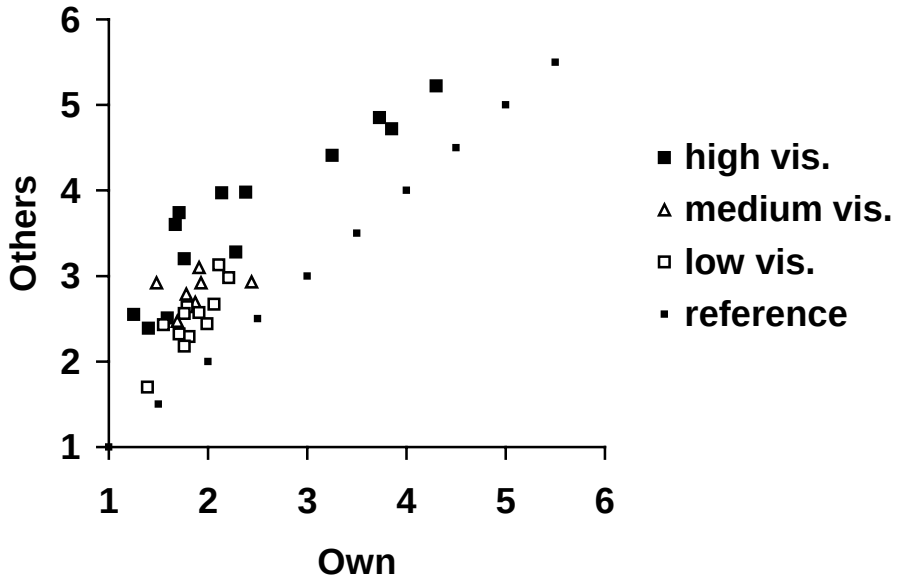

Figure 3. Perceived own compared to others' aberrant behaviour in driving for errors of different visibility. The scales varies from 1 = never to 6 = very often.

There is no clear tendency in Figure 3 that highly visible errors should decrease the biased perceptions of others behaviour, rather the other way around. More visible errors appear to lead to an increase in the extent to which others are seen commit these errors.

Discussion

The results discussed in the present paper are based on two different studies and different samples, in one of them own behaviour is estimated in the other the behaviour of other drivers. In this way independent estimates of the two kinds of error frequencies are compared. Still the result shows a strong bias towards perceiving others to perform errors more frequently than drivers themselves do. Differences in types of error do not appear to affect the bias. Violations are more common than other errors, both for own and others' behaviour. Easiness of detection does not change the picture to any greater extent. Contrary to expectations there is a small tendency that visible errors generate stronger bias. To what extent the bias affects driver behaviour is not known. The drivers often claim that it is more important to follow the rhythm of traffic rather than the speed limits (e.g. Åberg et al. 1997) but if that also mean that biased perceptions of others behaviour is important is not known.

References

Åberg, L. & Rimmö, P-A. (1998). Dimensions of aberrant behaviour. *Ergonomics*, 41, 39-56.

Åberg, L., Larsen L., Glad, A. & Beilinson, L. (1997). Observed vehicle speed and drivers' perceived speed of others. *Applied Psychology: An international Review*, 46, 287-302

Åberg, L. (2005). Other drivers' behaviour and speed violations. Paper presented at the ICTCT extra work shop in Campo Grande, Brazil, March 21-24.

Haglund, M. & Åberg, L. (2000). Speed choice in relation to speed limit and influences from other drivers. *Transportation Research Part F*, 3, 39-51

Manstead, A.S.R., Parker, D., Stradling, S.G., Reason, J.T., & Baxter, J.S. (1992). Perceived consencus in estimates of the prevalence of driving errors and violöations. *Journal of Applied Social Psychology*, 22, 509-530.

Ross, L., Greene, D., & House, P. (1976). The "false consensus effect": An ergonomic bias in social perception and attribution processes. *Journal of experimental social psychology*, 13, 279-301.