



# How do cyclists perceive different kinds of cycling facilities?

Carmen Hagemeister & Bernhard Schlag  
Dresden University, Department of Psychology, 01062 Dresden, Germany



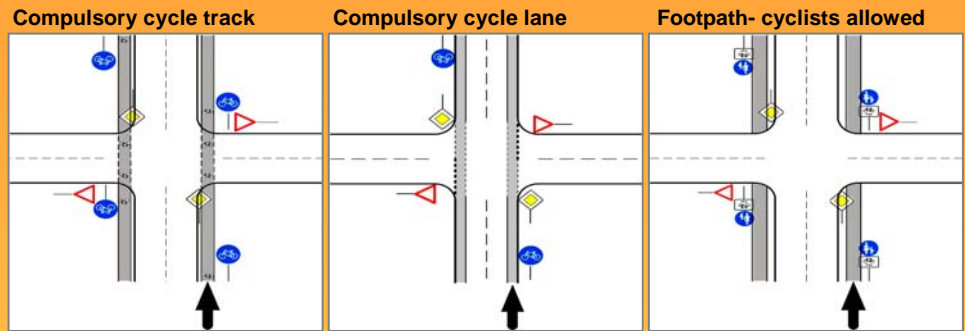
Cycle tracks are built, cycle lanes are marked on roads, cyclists are allowed to cycle on footpaths. These measures are intended to increase cyclists' safety and comfort but it is not clear how.

- ❖ How are these provisions perceived?
- ❖ Can a structure be found in the ratings which can be related to cyclists' needs and planning requirements like safety, comfort, directness or attractiveness (C.R.O.W., 1993)?
- ❖ Under which conditions are these provisions used; under which conditions not?

## Method

In a questionnaire cyclists were asked to rate cycle lanes, cycle tracks and footpaths where cycling is allowed with respect to 12 criteria. The questionnaire also asked under which conditions these provisions are used or not used.

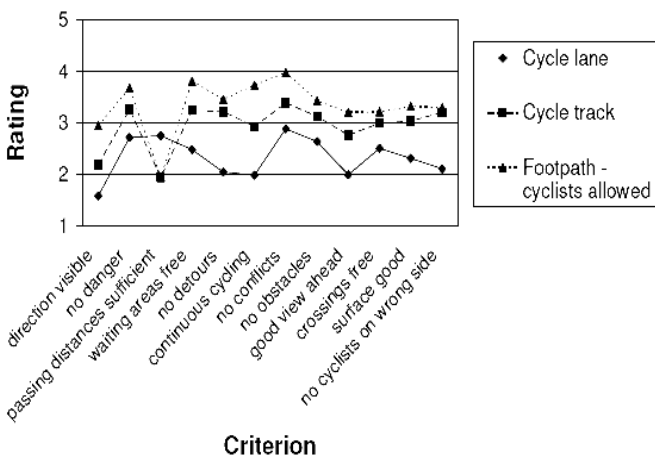
78 female and 396 male cyclists (and 14 persons of unknown gender) living in Germany from 15 to 69 years of age, most of them with higher level of education, filled in the questionnaire. The male participants travelled 6,480 km/year on average (standard deviation 5,223 km, min. 35 km, max. 30,000 km); the women 3,290 km/year (standard deviation 3,274 km, min. 50 km, max. 15,000 km).



The arrow in each sketch shows where the cyclist is coming from.

## Results

### How are the provisions rated?



Mean rating of the three facilities with respect to the twelve criteria,  $N = 480$  to 488. Ratings: 1 = always; 5 = never.

Factor analyses of the ratings of the three provisions (36 ratings in total) were carried out in order to find out which structure underlies the ratings. The results are shown in the table to the right. Interpretable solutions with one, two and three factors which allow converging conclusions were found.

### Conditions when provisions are not used

The participants were asked under which conditions they use or do not use the different provisions. The answers were content analysed and categorised. The main reasons given were obstacles and bad surfaces. More conditions were given for not using cycle tracks than for not using cycle lanes. These indicate that on average cycle tracks are of lower quality in construction and maintenance than cycle lanes. Besides these conditions, traffic volume was important to the option of cycling on the footpath if allowed.

### How are the provisions rated?

In most criteria cycle lanes got the best ratings, followed by cycle tracks, while footpaths where cycling is allowed got the worst ratings. The only criterion where cycle lanes got the worst rating was the passing distances of cars. The worst rating for passing distances on cycle lanes was given by those cyclists who ride on the carriageway instead of the footpath. This perception is probably the reason why they do not use cycle lanes. In Germany, the minimum width of a compulsory cycle lane is 1.5 m including the markings. If such a cycle lane is marked alongside parked cars and the cars on the carriageway simply stay in their lane, the passing distance is very small.

### Conditions when provisions are not used

The main reasons for not using cycle facilities are obstacles. Without knowing the circumstances it can be considered to be legal in many cases not to use an obstructed cycle facility. The next important reason for not using cycle facilities is their surface. It is important not only to provide cycle facilities but also to maintain them properly. Whenever cyclists are forced to ride on the carriageway because the cycle facility is blocked or of bad quality, conflicts between car drivers and cyclists are predestined.

### Structure of the ratings

cycling facility	criterion	1 factor situation for cyclists			2 factors separation from motor traffic joint riding with motor traffic		3 factors cycle tracks footpaths - cyclists allowed cycle lanes		
cycle track	good view ahead	.77	.73	.27	.78	.27			
	continuous cycling	.75	.74	.22	.80	.25			
	no danger	.73	.68	.29	.73	.25		.21	
	no obstacles	.70	.68	.23	.69	.23			
	no conflicts	.68	.68		.79				
	no detours	.59	.62		.57	.31			
	surface good	.62	.62		.67	.22			
	crossings free	.63	.59	.23	.64	.21			
	passing distance sufficient	.55	.36	.47	.53				.40
	direction visible	.74	.69	.30	.73	.26			.21
	no cyclists on wrong side	.46	.49		.47	.23			
	waiting areas free	.54	.60		.58	.26			
footpath - cyclists allowed	good view ahead	.70	.71		.30	.71	.21		
	continuous cycling	.60	.67			.75			
	no danger	.62	.65		.26	.67			
	no obstacles	.61	.65		.25	.68			
	no conflicts	.53	.61		.20	.66			
	no detours	.57	.62		.22	.67			
	surface good	.50	.54			.58			
	crossings free	.61	.59	.20	.22	.63	.23		
	passing distance sufficient	.41	.24	.41	.45	.33			
	direction visible	.64	.62	.20	.34	.55	.20		
	no cyclists on wrong side	.46	.51		.21	.51			
	waiting areas free	.29	.43			.60			
cycle lane	good view ahead	.51		.75		.75			
	continuous cycling	.50		.69	.21	.67			
	no danger	.43		.71		.69			
	no obstacles	.51		.66	.22	.68			
	no conflicts	.47		.64		.65			
	no detours	.35		.49		.49			
	surface good	.41		.57		.58			
	crossings free	.36		.65		.67			
	passing distance sufficient	.50	.20	.63	.21	.62			
	direction visible	.53	.23	.65	.25	.63			
	no cyclists on wrong side	.20		.43		.45			
	waiting areas free			.50		.50			
explained variance per factor	30.6%	25.3%	15.8%	18.0%	14.9%	14.7%			
explained variance sum	30.6%		41.1%		47.6%				

Results of factor analyses with one, two and three factors. For the solutions with more than one factor, the rotated component matrix is presented. The highest loading of a factor is marked bold. Factor loadings below |.2| are omitted.

## Discussion

### Structure of the ratings

Factors related to the planning criteria were found in none of the analyses. No evidence was found that some cyclists mainly strive for safety and others mainly for speed.

The ratings of the provisions were not independent, nor were the ratings of the criteria within each provision. Three interpretable results were found in factor analyses. The solution with **one factor** "contentment with the situation for cyclists" explains 30.6 per cent of the variance of the ratings. It may reflect how much cyclists expect from special provisions which separate them to a greater or lesser extent from motor traffic. In the solution with the **two factors** "contentment with separation from motor traffic" and "contentment with joint riding with motor traffic" the ratings for the passing distance of cars on cycle lanes and on the footpath load on the factor "contentment with joint riding with motor traffic". This means that the way cyclists judge passing distances when they are separated from motor traffic depends on their attitude towards cycle lanes where no kerb separates them from motor traffic. In the solution with **three factors** the factor contentment with separation splits up into two factors related to cycle tracks and cycling on the footpath.