Bike paths – love them or hate them?
Why do some cyclists prefer separation and others cycling in mixed traffic?

Mannheim, 20 September 2017
Infrastructure for cycling

Cycling
- in mixed traffic with motor traffic
- on a bike lane
- on a bike path (not all compulsory, but knowledge level low)

Lower separation preference:
- Men compared to women (Gaffga, 2016; Heesch, Sahlqvist & Garrard, 2012)
- Middle aged adults compared to younger and older adults (Gaffga, 2016)
- Persons who want to cycle faster (Zimber, 1994)

Who prefers which kind of infrastructure for cycling and WHY???
Infrastructure for cycling

Who prefers which kind of infrastructure for cycling and **WHY**???

Amount of traffic?
Practical advantages of different kinds of infrastructure?
Perceived safety?
Methods

Questionnaire

Online questionnaire programmed with soscisurvey (Leiner, 2014)

Parts:
- demography,
- preference of infrastructure, perception of other road users and obstacles,
- perception of risk and crashes,
- personal way of cycling and mobility habits
Participants

Living in Germany
424 female, 1330 male
18 to 76 years of age (mean 43 years, SD 14 years)
58% with a bachelor or master degree

60% biked every day
72% bike main means of transport
25% used a car never or almost never
### Amount of traffic

"I prefer cycling on/in ... most" (N = 1789)

<table>
<thead>
<tr>
<th></th>
<th>Busy main road</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mixed traffic</td>
</tr>
<tr>
<td>Moderately busy main</td>
<td>137 (7.7%)</td>
</tr>
<tr>
<td>road</td>
<td></td>
</tr>
<tr>
<td>Bike lane</td>
<td>2 (0.1%)</td>
</tr>
<tr>
<td>Bike path</td>
<td>2 (0.1%)</td>
</tr>
</tbody>
</table>

Note: Table shows persons who only marked one option for each question.

### More traffic => more separation preferred on average
Perceived obstacles

When cycling I encounter more obstacles (in the form of cars travelling or parking, objects, pedestrians) on ...

Preferred part of the road:
- Fewer obstacles
- Easier to avoid
- Bothered less

Preferred part of the road: practical advantages
## Results

### Better on a bike lane or a bike path?

<table>
<thead>
<tr>
<th>Spearman rho</th>
<th>preference moderately busy main roads</th>
<th>preference busy main roads</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cycling less demanding</td>
<td>.58*</td>
<td>.57*</td>
</tr>
<tr>
<td>Crash less likely</td>
<td>.52*</td>
<td>.57*</td>
</tr>
<tr>
<td>Have to pay less attention</td>
<td>.46*</td>
<td>.50*</td>
</tr>
<tr>
<td>Can best avoid obstacles</td>
<td>.37*</td>
<td>.42*</td>
</tr>
<tr>
<td>If I have a crash, it is probably less severe</td>
<td>.33*</td>
<td>-.49*</td>
</tr>
<tr>
<td>Fewer obstacles</td>
<td>.21*</td>
<td>.22*</td>
</tr>
</tbody>
</table>

Note. Bike lane = 3, preference lane & path / same on both = 4, bike path = 5.

**Preferred separation:**  
- less attention  
- fewer problems with obstacles  
- lower crash risk
### Better on a bike lane or a bike path?

<table>
<thead>
<tr>
<th>Spearman rho</th>
<th>preference moderately busy main roads</th>
<th>preference busy main roads</th>
</tr>
</thead>
<tbody>
<tr>
<td>In general it is safe to cycle on a bike path.</td>
<td>.45*</td>
<td>.54*</td>
</tr>
<tr>
<td>In general it is safe to cycle on a bike lane.</td>
<td>-.37*</td>
<td>-.30*</td>
</tr>
<tr>
<td>In general it is safe to cycle in mixed traffic.</td>
<td>-.32*</td>
<td>-.45*</td>
</tr>
<tr>
<td>I prefer to cycle on a bike path because fast cars pass me on the road.</td>
<td>.54*</td>
<td>.67*</td>
</tr>
</tbody>
</table>

Note. 5-point rating scale 1 = "do not agree at all" to 5 = "agree very much". Bike lane = 3, preference lane & path / same on both = 4, bike path = 5.

### Preferred separation: safer
## What might happen?

When cycling I am very afraid of crashes ...

<table>
<thead>
<tr>
<th>(Spearman rho)</th>
<th>preference moderately busy main roads</th>
<th>preference busy main roads</th>
</tr>
</thead>
<tbody>
<tr>
<td>... with a car travelling in the same direction as me</td>
<td>.32*</td>
<td>.34*</td>
</tr>
<tr>
<td>... at rail crossings and along tram rails</td>
<td>.12*</td>
<td>.13*</td>
</tr>
<tr>
<td>... with cars that are parking or with opening doors</td>
<td>.09*</td>
<td>.10*</td>
</tr>
<tr>
<td>... with cars that are turning</td>
<td>.06</td>
<td>.07</td>
</tr>
<tr>
<td>... with cyclists</td>
<td>-.01</td>
<td>.05</td>
</tr>
<tr>
<td>... with pedestrians</td>
<td>-.02</td>
<td>-.01</td>
</tr>
</tbody>
</table>

Note. Separation preference: 1 = mixed traffic, 2 = mixed traffic & bike lane, 3 = bike lane, 4 = bike lane & bike path, 5 = bike path. 5-point rating scale 1 = "do not agree at all" to 5 = "agree very much".
Reasons for preferring (complete) separation

Rather general preference for infrastructure:
Cyclists love what they use – or do they use what they love?

The subjective problem which makes separation necessary:
Cars travelling in the same direction
≠ reality: about 2-6% of cyclist crashes (Lieb, 2012)

The objective problem for bike collisions in Germany:
- Cycling on the pavement
- Cycling on the bike path wrong direction
Other options than separation?

Lower speeds in inhabited areas
Strict enforcement of speed
(Forschungsgesellschaft für Straßen- und Verkehrswesen. Arbeitsgruppe Straßenentwurf, 2010).

Speed limit 30 km/hour:
Cyclists more willing to cycle in mixed traffic (Gaffga, 2016)

Police controls of passing distances
Bridging the gap between research and practice

Recommendations to make cycling safer
- lower speeds where separation is impossible
- stricter enforcement of speed limits
- police control of passing distances
- information about real risks for cyclists (cycling on pavement, cycling in wrong direction)

Transferable to other countries
- Minimum number of cyclists necessary?
Thank you for your attention!

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