

Supplementary material:

## Trusting Other Vehicles' Automatic Emergency Braking Decreases Self-Protective Driving



Figure S1. Driving simulator used in experiments 1 and 2. The traffic environment displayed on the monitors is unrelated to the current experiments.

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Figure S2. Approaching vehicles (blue or red) at each intersection in experiments 1 and 2.

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Figure S3. Simulated traffic environment in the test session in experiments 1 and 2 (color version). The approaching vehicle's color was red or blue. A pedestrian behind the house (see figure) appeared only once, at the final presentation of an intersection during the test session. The structure of intersections in test and learning sessions was identical, except that the pedestrian never appeared in the learning session.

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Table S1. Examples of experimental settings in the learning session.

| Intersection | Distance<br>(participants) | Distance<br>(approaching vehicle) | Color | Behavior     |
|--------------|----------------------------|-----------------------------------|-------|--------------|
| 1            | 120 m                      | 85 m                              | Red   | Non-yielding |
| 2            | 120 m                      | 75 m                              | Blue  | Non-yielding |
| 3            | 120 m                      | 85 m                              | Blue  | Non-yielding |
| 4            | 120 m                      | 75 m                              | Red   | Non-yielding |
| 5            | 120 m                      | 85 m                              | Red   | Non-yielding |
| 6            | 120 m                      | 75 m                              | Blue  | Non-yielding |
| 7            | 120 m                      | 85 m                              | Blue  | Non-yielding |
| 8            | 120 m                      | 95 m                              | Red   | Yielding     |
| 9            | 120 m                      | 95 m                              | Red   | Non-yielding |
| 10           | 120 m                      | 95 m                              | Blue  | Yielding     |
| 11           | 120 m                      | 95 m                              | Blue  | Non-yielding |
| 12           | 120 m                      | 75 m                              | Red   | Non-yielding |

- Distance (participants) indicates the distance between the location of the participant's vehicle and the center of the intersection. In the learning session, approaching vehicles always appeared when participants reached 120 m before each intersection.
- Distance (approaching vehicle) indicates the distance between the initial location of the approaching vehicle and the center of the intersection. Differences in these distances correspond to the differences of TTAs. The order of distances was the same for all participants.
- Color indicates the color of the approaching vehicle at each intersection (counterbalanced between participants).
- Behavior indicates whether the approaching vehicle passed through the intersection without deceleration (Non-yielding) or stopped before entering the intersection (Yielding). The approaching vehicle always yielded in the eighth and tenth intersections.

Table S2. Examples of experimental settings in either AEB-equipped or AEB-unequipped condition in the test session.

| Intersection | Distance<br>(participants) | Distance<br>(approaching vehicle) | TTA         | Color | Behavior |
|--------------|----------------------------|-----------------------------------|-------------|-------|----------|
| 1            | -                          | -                                 | -           | -     | -        |
| 2            | 89.5 m                     | 95 m                              | Longer-TTA  | Red   | Yielding |
| 3            | 94.5 m                     | 95 m                              | Shorter-TTA | Red   | Yielding |
| 4            | 89.5 m                     | 95 m                              | Longer-TTA  | Red   | Yielding |
| 5            | 94.5 m                     | 95 m                              | Shorter-TTA | Red   | Yielding |
| 6            | 89.5 m                     | 95 m                              | Longer-TTA  | Red   | Yielding |
| 7            | 94.5 m                     | 95 m                              | Shorter-TTA | Red   | Yielding |
| 8            | 89.5 m                     | 95 m                              | Longer-TTA  | Red   | Yielding |

- Distance (participants) indicates the distance between the location of the participant's vehicle and the center of the intersection when an approaching vehicle appeared. Differences in these distances correspond to the differences of TTAs.
- Distance (approaching vehicle) indicates the distance between the initial location of the approaching vehicle and the center of the intersection. In the test session, approaching vehicles always appeared at the same location.
- TTA indicates whether TTAs at each intersection were shorter or longer, determined by distance (participants) and distance (approaching vehicle). The shorter and longer TTA conditions were repeated one after the other and the order was counterbalanced between participants.
- In the test session, the color of the approaching vehicle was the same throughout one block (either AEB-equipped or AEB-unequipped condition). See also Figure 3.
- In the test session, the approaching vehicle always stopped before entering the intersection.

Table S3. Estimated parameters in experiment 1, excluding two participants who had prior experience that AEB worked.

|                            | Predictor | $b$ [95% CI]          | $SD$ | $\hat{R}$ |
|----------------------------|-----------|-----------------------|------|-----------|
| <i>Braking probability</i> |           |                       |      |           |
|                            | Intercept | 0.85 [-0.69, 2.49]    | 0.80 | 1.00      |
|                            | Gender    | -0.06 [-3.26, 3.15]   | 1.62 | 1.00      |
|                            | TTA       | -2.66 [-3.51, -1.88]  | 0.41 | 1.00      |
|                            | Belief    | 0.33 [-0.31, 0.99]    | 0.33 | 1.00      |
| <i>Braking latency</i>     |           |                       |      |           |
|                            | Intercept | 1.95 [1.71, 2.19]     | 0.12 | 1.00      |
|                            | Gender    | -0.44 [-0.93, 0.05]   | 0.25 | 1.00      |
|                            | TTA       | -0.12 [-0.24, -0.005] | 0.06 | 1.00      |
|                            | Belief    | 0.13 [0.01, 0.25]     | 0.06 | 1.00      |

Note:  $b$  = expected a posteriori of slope parameter in each model, 95% CI = 95% credible interval,  $SD$  = standard deviation of the posterior distribution,  $\hat{R}$  = Gelman-Rubin convergence statistics, Belief = belief about AEB.