

Supplemental Material for

Perspective-taking accessibility informs prosocial judgments in sacrificial scenarios: evidence across cognitive priming tasks.

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Materials

Visual stimuli depicting full and partial accessibility in autonomous vehicle collisions were taken from Martin, R., Kusev, P., & Van Schaik, P. (2021). Autonomous vehicles: How perspective-taking accessibility alters moral judgments and consumer purchasing behavior. *Cognition*, 212, 104666.

Partial PT Accessibility/Non-utilitarian Default

*You are the sole passenger in an autonomous self-driving vehicle travelling at the speed limit down a main road. Suddenly, 10 pedestrians appear ahead, in the direct path of the car. The car could be programmed to either **SWERVE** off to the side of the road, where it will impact a barrier, killing you but leaving the 10 pedestrians unharmed or **STAY** on its current path where it will kill the 10 pedestrians, but you will be unharmed (see the picture illustrating this scenario).*

Full PT Accessibility/Non-utilitarian Default

*You could be the sole passenger in an autonomous self-driving vehicle travelling at the speed limit down a main road. Or you could be one of the 10 pedestrians that have appeared ahead, in the direct path of the car. The car could be programmed to either **SWERVE** off to the side of the road, where it will impact a barrier, killing the passenger (that could be you) but leaving the 10 pedestrians unharmed or **STAY** on its current path where it will kill the 10 pedestrians (that could include you), but the passenger will be unharmed (see the picture illustrating this scenario).*

Partial PT Accessibility/Utilitarian Default

*You are the sole passenger in an autonomous self-driving vehicle, travelling at the speed limit down a main road. Suddenly, a barrier appears ahead, in the direct path of the car. The car could be programmed to either **SWERVE** off to the side of the road, where it will hit 10 pedestrians, killing them but leaving you unharmed or **STAY** on its current path where it will impact the barrier, killing you, but leaving the 10 pedestrians unharmed (see the picture illustrating this scenario).*

Full PT Accessibility/Utilitarian Default

*You could be the sole passenger in an autonomous self-driving vehicle travelling at the speed limit down a main road. Or you could be one of the 10 pedestrians that are stood on the side of the road. Suddenly, a barrier appears ahead, in the direct path of the car. The car could be programmed to either **SWERVE** off to the side of the road, where it will hit the 10 pedestrians, killing them (this could include you) or **STAY** on its current path where it will impact the*

barrier, killing the passenger (this could be you), but the 10 pedestrians will be unharmed (see the picture illustrating this scenario).”

Judgement Task 1 (Judgments of moral appropriateness for utilitarian vehicles)

Judge the moral appropriateness of programming autonomous self-driving cars to **SWERVE** in situations like the one described earlier.

Not at all appropriate Definitely appropriate
[-----]

Judgement Task 2 (Judgments of moral appropriateness for non-utilitarian vehicles)

Judge the moral appropriateness of programming autonomous self-driving cars to **STAY** in situations like the one described earlier.

Not at all appropriate Definitely appropriate
[-----]

Attention Check

In the scenario you read:

How many people were **inside** the car? []

How many people were **outside** of the car? []

List of Anagrams

- | | | | |
|----|--------|----|-------|
| 1 | ETAWS | 11 | EIUTQ |
| 2 | HUNCL | 12 | CMIAG |
| 3 | OTAGN | 13 | ESRIN |
| 4 | LICH D | 14 | BEETR |
| 5 | SEALF | 15 | PLAEP |
| 6 | RUTOC | 16 | EDNOZ |
| 7 | GANIL | 17 | HOINR |
| 8 | ROGOM | 18 | NTALP |
| 9 | TTRHU | 19 | OHBOT |
| 10 | MGIIC | 20 | LUGAH |

Additional Analysis

In the main article, for all experiments, we report the dependent variable, judgments of moral appropriateness, as a utilitarian weight, where we subtracted judgments for non-utilitarian AVs from judgments for utilitarian AVs. Here we report analyses of each judgment task separately.

Experiment 1: Judging the Moral Appropriateness of Utilitarian Vehicles

A 2x3 ANOVA was conducted to test the main effects of type of PT accessibility (partial, full) and type of cognitive priming (no prime, task-relevant prime, task-irrelevant prime) and their interaction on judgments of moral appropriateness for utilitarian vehicles. It was found that type of PT accessibility significantly influenced judgments of moral appropriateness for utilitarian AVs $F(1, 354) = 20.87, p < .001, \eta_p^2 = .06$. In particular, participants who received AV crash scenarios with full PT accessibility ($M = 6.82; SD = 1.84$) were more utilitarian in their judgments than participants who received scenarios with partial PT accessibility ($M = 5.72; SD = 2.66$). However, the main effect of type of cognitive priming was not statistically significant $F(2, 354) = 1.16, p = .316, \eta_p^2 = .01$. Moreover, the interaction of type of PT accessibility by type of cognitive priming was also not statistically significant $F(2, 354) = 2.15, p = .119, \eta_p^2 = .01$.

Experiment 1: Judging the Moral Appropriateness of Non-Utilitarian (Passenger Protective) Vehicles

A subsequent 2x3 ANOVA was employed to test the main effects of type of PT accessibility and type of cognitive priming and their interaction on judgments of moral appropriateness for non-utilitarian vehicles. The results revealed that the main effects of type of PT accessibility had a significant impact on participants' judgments of moral appropriateness for non-utilitarian AVs $F(1, 354) = 34.85, p < .001, \eta_p^2 = .09$. In particular, participants who received scenarios containing partial PT accessibility ($M = 3.93; SD = 2.80$) demonstrated a greater approval for non-utilitarian AVs compared to participants who received AV crash scenarios containing full PT accessibility ($M = 2.45; SD = 1.90$). However, the main effect of type of cognitive priming was not statistically significant $F(2, 354) = 1.49, p = .228, \eta_p^2 = .01$. Furthermore, the interaction of type of PT accessibility by type of cognitive priming was also not statistically significant $F(2, 354) = 1.87, p = .156, \eta_p^2 = .01$.

Experiment 2: Judging the Moral Appropriateness of Utilitarian Vehicles

A 2x3x2 independent ANOVA was conducted to explore the main effects of type of PT accessibility (partial, full), type of cognitive priming (no prime, task-relevant prime, task-irrelevant prime) and type of scenario (utilitarian-default, non-utilitarian-default) and their interaction on judgments of moral appropriateness for utilitarian vehicles. The results reveal that type of PT accessibility significantly influences judgments of moral appropriateness for utilitarian vehicles $F(1, 554) = 25.26, p < .001, \eta_p^2 = .04$. In particular, participants who considered scenarios with full PT accessibility ($M = 6.45; SD = 2.35$) demonstrated greater approval of utilitarian vehicles than participants who considered scenarios with partial PT accessibility ($M = 5.34; SD = 2.67$). The remaining tests for main and interaction effect on

judgements of moral appropriateness for utilitarian vehicles were non-significant and have been reported in Table S1.

Table S1

Summary of non-significant predictors for judgements of moral appropriateness for utilitarian vehicles

Predictor	<i>F</i>	<i>df</i>	<i>p</i>	η_p^2
Type of Cognitive Priming	1.709	2, 554	.182	.01
Type of Scenario Action	1.090	1, 554	.297	.00
Type of Accessibility x Type of Cognitive Priming	.447	2, 554	.640	.00
Type of PT Accessibility x Type of Scenario	.044	1, 554	.833	.00
Type of Scenario x Type of Cognitive Priming	.055	2, 554	.946	.00
Type of PT Accessibility x Type of Scenario Action x Type of Cognitive Priming	.072	2, 554	.931	.00

Note. Dependent Measure: Judgements of moral appropriateness for utilitarian AVs

Experiment 2: Judging the Moral Appropriateness of Non-Utilitarian (Passenger-Protective) Vehicles

To explore non-utilitarian framing, a 2x3x2 independent ANOVA was conducted to explore the main effects of type of PT accessibility, type of cognitive priming and type of scenario and their interaction on judgements of moral appropriateness for non-utilitarian vehicles. As with the analysis for utilitarian vehicles, type of PT accessibility was found to significantly influence participants' moral judgments for non-utilitarian vehicles $F(1, 554) = 21.37, p < .001, \eta_p^2 = .037$. Specifically, participants who considered scenarios with partial PT accessibility ($M = 3.89; SD = 2.95$) demonstrated greater approval of non-utilitarian vehicles than participants who considered scenarios with full PT accessibility ($M = 2.79; SD = 2.66$). The remaining tests for main and interaction effect on judgements of moral appropriateness for utilitarian vehicles were non-significant and have been reported in Table S2.

Table S2

Summary of non-significant predictors for judgements of moral appropriateness for non-utilitarian vehicles

Predictor	<i>F</i>	<i>df</i>	<i>p</i>	η_p^2
Type of Cognitive Priming	.218	2, 554	.805	.00
Type of Scenario Action	.421	1, 554	.517	.00
Type of Accessibility x Type of Cognitive Priming	1.797	2, 554	.167	.01
Type of PT Accessibility x Type of Scenario	.021	1, 554	.884	.00
Type of Scenario x Type of Cognitive Priming	.963	2, 554	.382	.00
Type of PT Accessibility x Type of Scenario Action x Type of Cognitive Priming	.629	2, 554	.534	.00

Note. Dependent Measure: Judgements of moral appropriateness for non-utilitarian AVs

Experiment 3: Judging the Moral Appropriateness of Utilitarian Vehicles

To test the influence of variables type of PT accessibility (partial, full), type of cognitive priming (no prime, early prime, late prime) and type of scenario (utilitarian-default, non-utilitarian-default) on judgments of moral appropriateness for utilitarian vehicles, we ran a 2x3x2 ANOVA. The main effect of type of accessibility was significant $F(1, 718) = 75.74, p < .001, \eta_p^2 = .10$. In particular, participants who received AV crash scenarios with full PT accessibility ($M = 6.97; SD = 1.73$) demonstrated greater approval for utilitarian vehicles than participants who received scenarios with partial PT accessibility ($M = 5.54; SD = 2.57$). Moreover, the main effect of type of cognitive priming was significant $F(2, 718) = 5.08, p = .006, \eta_p^2 = .01$. The remaining main effect and interaction effects were statistically non-significant and have been summarised in Table S3.

Table S3

Summary of non-significant predictors for judgements of moral appropriateness for utilitarian vehicles

Predictor	<i>F</i>	<i>df</i>	<i>p</i>	η_p^2
Type of Scenario Action	.181	1, 718	.670	.00
Type of Accessibility x Type of Cognitive Priming	2.112	2, 718	.122	.01
Type of PT Accessibility x Type of Scenario	.211	1, 718	.646	.00
Type of Scenario x Type of Cognitive Priming	.043	2, 718	.958	.00
Type of PT Accessibility x Type of Scenario Action x Type of Cognitive Priming	.075	2, 718	.928	.00

Note. Dependent Measure: Judgements of moral appropriateness for utilitarian AVs

Experiment 3: Judging the Moral Appropriateness of Non-Utilitarian (Passenger-Protective) Vehicles

A 2x3x2 ANOVA was employed to test for the influence of type of PT accessibility, type of cognitive priming and type of scenario on participants' judgments of moral appropriateness. The results yielded a significant main effect of type of PT accessibility $F(718) = 48.66$, $p < .001$, $\eta_p^2 = .063$. Specifically, participants who received AV crash scenarios with partial PT accessibility ($M = 3.69$; $SD = 2.76$) were more approving of non-utilitarian AVs than participants who received scenarios with full PT accessibility ($M = 2.38$; $SD = 2.26$). The remaining main effect and interaction effects were statistically non-significant and have been summarised in Table S4.

Table S4

Summary of non-significant predictors for judgements of moral appropriateness for non-utilitarian vehicles

Predictor	<i>F</i>	<i>df</i>	<i>p</i>	η_p^2
Type of Cognitive Priming	2.704	2, 718	.068	.007
Type of Scenario Action	.041	1, 718	.839	.00
Type of Accessibility x Type of Cognitive Priming	.305	2, 718	.738	.00
Type of PT Accessibility x Type of Scenario	.007	1, 718	.934	.00
Type of Scenario x Type of Cognitive Priming	.190	2, 718	.827	.00
Type of PT Accessibility x Type of Scenario Action x Type of Cognitive Priming	.023	2, 718	.978	.00

Note. Dependent Measure: Judgements of moral appropriateness for non-utilitarian AVs

Utilitarian Judgments of Moral Appropriateness in the Task-irrelevant Priming Condition of Experiments 1 and 2

In Experiment 1, an independent samples t-test was conducted to explore judgments of moral appropriateness in participants who underwent the task-irrelevant prime across partial and full PT conditions. The results revealed the difference between the task-irrelevant prime task with full PT accessibility ($M = 4.24$; $SD = 3.23$) and the task-irrelevant prime task with partial PT accessibility ($M = 2.97$; $SD = 3.84$) is approaching significance $t(118) = 1.98$, $p = .050$, Cohen's $d = .361$. In Experiment 2, we ran another independent samples t-test on these variables which revealed the difference between the task-irrelevant prime condition with full PT accessibility ($M = 3.58$; $SD = 3.87$) and the task-irrelevant prime condition with partial PT accessibility ($M = 2.32$; $SD = 3.98$) was statistically significant $t(181) = 2.16$, $p = .032$, Cohen's $d = .320$. Whilst the task-irrelevant prime enhances utilitarian judgments under partial PT accessibility, it does not do so in-line with utilitarian judgments under full PT accessibility. These findings further support the importance of full accessibility to PT accessibility in moral scenarios over the method of judgment of elicitation.