

Online Resource 1

Trust–reliance alignment is context-sensitive in automated driving: a within-person secondary analysis of open experimental data

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Contents: data provenance, analysis specification, full coefficients, conditional slopes, transition analyses, sensitivity model, and reproducibility checks.

S1 Data provenance and reuse

Source dataset: Tanevska A, Winkle K, Castellano G (2025), Zenodo, <https://doi.org/10.5281/zenodo.15648216>. The Zenodo API record identifies the license as CC BY 4.0. The file analyzed was prolific_AllVariables_Zenodo.csv (419,659 bytes). The analysis script verifies 206 rows and 153 columns before proceeding.

Source article: Tanevska A, Winkle K, Castellano G (2025), Frontiers in Robotics and AI, <https://doi.org/10.3389/frobt.2025.1657857>. The article reports recruitment, exclusions, measures, ethics, and the original experimental analyses.

Privacy minimization: the derived analysis-ready file excludes free-text answers, country and language fields, and replaces the source identifier with sequential labels P001–P206. The publicly archived source remains the authoritative record.

S2 Analysis-ready structure

Variable	Definition
ID	Sequential participant label; clustering unit
scenario	Highway or Suburbs
scene	1, 2 (unexpected event), or 3 (resolution)
loa	Conferred level of automation, 0–3
trust	Scene trust score, –2 to 4
comfort	Scene comfort, –1 to 1
high_information	1 = high information; 0 = low
first_exposure	1 = scenario experienced first
trust_between	Participant mean trust across six scenes
trust_within	Scene trust minus participant mean
age_z; avnars_z; dbq_z	Participant covariates standardized over N = 206
highway; scene2; scene3	Model indicator variables
interaction columns	Products of within trust with highway and high information

S3 Model specification

Model 1 estimated conferred LoA from an intercept, between-person trust, within-person trust, highway context, Scene 2, Scene 3, high-information interface, first scenario exposure, within-trust × highway, within-trust × high-information, standardized age, standardized AV-NARS, and standardized DBQ. Model 2 added between-

and within-person comfort. Ordinary least squares coefficients used CR1 standard errors clustered over 206 participants and t inference with 205 degrees of freedom.

The decomposition was $\text{trust}_{ij} = \text{trust}_i + (\text{trust}_{ij} - \text{trust}_i)$. The first term identifies stable differences among participants; the second identifies whether the same participant's scene-specific departure in trust is aligned with their scene-specific reliance choice.

S4 Full cluster-robust coefficients

M1: trust and design

Term	b	Cluster SE	t	p	95% CI
Intercept	2.173	0.070	30.916	< .001	[2.035, 2.312]
trust_between	0.205	0.027	7.596	< .001	[0.152, 0.259]
trust_within	0.291	0.036	8.022	< .001	[0.219, 0.362]
highway	-0.612	0.052	-11.776	< .001	[-0.714, -0.509]
scene2	-0.616	0.042	-14.539	< .001	[-0.699, -0.532]
scene3	-0.719	0.047	-15.429	< .001	[-0.811, -0.627]
high_information	-0.003	0.061	-0.057	= .955	[-0.123, 0.116]
first_exposure	-0.093	0.047	-1.976	= .050	[-0.185, -0.000]
trust_within_x_high way	-0.080	0.040	-2.027	= .044	[-0.158, -0.002]
trust_within_x_high_ info	-0.021	0.040	-0.527	= .599	[-0.100, 0.058]
age_z	0.039	0.031	1.278	= .203	[-0.021, 0.100]
avnars_z	-0.024	0.032	-0.761	= .447	[-0.088, 0.039]
dbq_z	-0.036	0.033	-1.076	= .283	[-0.101, 0.030]

Note. N observations = 1,236; participants = 206; $R^2 = 0.456$.

M2: plus comfort

Term	b	Cluster SE	t	p	95% CI
Intercept	2.085	0.075	27.811	< .001	[1.937, 2.232]
trust_between	0.204	0.028	7.233	< .001	[0.148, 0.259]
trust_within	0.262	0.038	6.988	< .001	[0.188, 0.336]
highway	-0.505	0.060	-8.492	< .001	[-0.623, -0.388]
scene2	-0.591	0.044	-13.447	< .001	[-0.678, -0.505]
scene3	-0.682	0.047	-14.527	< .001	[-0.775, -0.590]
high_information	-0.006	0.061	-0.101	= .919	[-0.127, 0.115]
first_exposure	-0.057	0.046	-1.235	= .218	[-0.149, 0.034]
trust_within_x_high way	-0.085	0.040	-2.140	= .034	[-0.162, -0.007]
trust_within_x_high_ info	-0.015	0.039	-0.373	= .709	[-0.092, 0.063]
age_z	0.040	0.031	1.295	= .197	[-0.021, 0.102]

Term	b	Cluster SE	t	p	95% CI
avnars_z	-0.017	0.036	-0.468	= .640	[-0.088, 0.054]
dbq_z	-0.037	0.033	-1.144	= .254	[-0.101, 0.027]
comfort_between	0.038	0.088	0.436	= .663	[-0.136, 0.212]
comfort_within	0.160	0.045	3.559	< .001	[0.071, 0.248]

Note. N observations = 1,236; participants = 206; $R^2 = 0.463$.

S5 Conditional slopes and contrasts

Contrast	Estimate	Cluster SE	p	95% CI
Within-person trust slope: Suburbs, low information	0.291	0.036	< .001	[0.219, 0.362]
Within-person trust slope: Highway, low information	0.210	0.031	< .001	[0.149, 0.272]
Within-person trust slope: Suburbs, high information	0.270	0.044	< .001	[0.182, 0.357]
Within-person trust slope: Highway, high information	0.189	0.036	< .001	[0.119, 0.260]
Within-person minus between-person trust slope	0.085	0.043	= .050	[-0.000, 0.171]

S6 Event-transition analysis

Scenario	Transition	Δ Trust M	SD	Δ LoA M	SD	Spearman rho	95% boot CI	Holm p
Highway	unexpected event (1 to 2)	-0.655	1.534	-0.829	0.881	0.308	[0.182, 0.425]	< .001
Highway	resolution (2 to 3)	-0.209	1.514	-0.251	0.990	0.324	[0.182, 0.451]	< .001
Suburbs	unexpected event (1 to 2)	-0.189	1.317	-0.591	0.824	0.239	[0.091, 0.374]	< .001
Suburbs	resolution (2 to 3)	0.272	1.304	0.084	0.967	0.309	[0.168, 0.443]	< .001

Note. Bootstrap intervals used 5,000 participant resamples with seed 20260826.

S7 Standardized sensitivity model

Term	Standardized b	Cluster SE	t	p	95% CI
Intercept	0.783	0.058	13.389	< .001	[0.668, 0.898]
trust_between_z	0.293	0.039	7.596	< .001	[0.217, 0.369]
trust_within_z	0.340	0.042	8.022	< .001	[0.256, 0.424]
highway	-0.611	0.052	-11.776	< .001	[-0.714, -0.509]
scene2	-0.615	0.042	-14.539	< .001	[-0.699, -0.532]
scene3	-0.719	0.047	-15.429	< .001	[-0.810, -0.627]

Term	Standardized b	Cluster SE	t	p	95% CI
high_information	-0.003	0.061	-0.057	= .955	[-0.123, 0.116]
first_exposure	-0.093	0.047	-1.976	= .050	[-0.185, -0.000]
trust_within_z_x_highway	-0.094	0.046	-2.027	= .044	[-0.185, -0.003]
trust_within_z_x_high_info	-0.025	0.047	-0.527	= .599	[-0.117, 0.068]
age_z	0.039	0.031	1.278	= .203	[-0.021, 0.100]
avnavs_z	-0.024	0.032	-0.761	= .447	[-0.088, 0.039]
dbq_z	-0.036	0.033	-1.076	= .283	[-0.101, 0.030]

Note. Outcome and focal trust variables were standardized. $R^2 = 0.456$.

S8 Reproducibility and integrity checks

- Source-file validation: exactly 206 participant rows and 153 columns were required.
- Missingness: zero missing values in all modeled variables; no imputation.
- Observation accounting: 206 participants $\times$ 2 scenarios $\times$ 3 scenes = 1,236 rows.
- Identifier minimization: derived data use P001–P206; source identifiers and free text are not redistributed.
- Determinism: bootstrap seed fixed at 20260826; all figures and tables are regenerated by one script.
- Inference: participant-clustered CR1 covariance; no independence assumption across six scenes within a participant.
- Multiplicity: four transition-correlation p values adjusted by Holm's method.
- Interpretive constraint: alignment is not normative calibration because the vignettes do not provide a trial-level externally verified criterion for correct reliance.
- Temporal constraint: trust followed action choice; no causal mediation claim is made.

S9 File map

Online resource	File	Purpose
1	CTW_Online_Resource_1.pdf	Methods, full results, provenance, checks
2	CTW_Reproducible_Analysis.py	Complete deterministic analysis
3a	CTW_Analysis_Ready_Data.csv	Privacy-minimized 1,236-row derived dataset
3b	CTW_Analysis_Workbook.xlsx	Auditable formatted tables and chart