Appendix D: Signal detection theory supplementary analysis

We applied signal detection theory to more robustly scrutinize participants' truth discernment ability. Signal Detection Theory posits that successful stimulus detection is dependent on people's discernment ability to recognize true and false information and their overall response bias towards reporting all (dis)information as true or as false. Of note, Signal Detection Theory has been recently applied to model people's performance in truth discernment tasks (e.g., Batailler et al., 2022). In Signal Detection Theory terminology, the discriminatory ability is defined as d' (dprime) and is calculated from the normally distributed hit rate minus the false alarm rate in truth discernment tasks. The response bias is defined as c' (cbias) and is calculated as: $-1 * (hit\ rate - false\ alarm) / 2$.

Table D1. *Multilevel model for climate truth discriminatory ability (*d'*), passive control condition.*

Predictor	Estimate	SE	t-value	95% Confidence Intervals Lower	95% Confidence Intervals Upper	p
Intercept	0.42	0.10	3.978	0.21	0.62	< .001
Age	0.01	0.001	6.523	0.006	0.011	< .001
Gender	F-value(3, 861.92):		0.2381			.87
Political ideology	-0.04	0.01	-3.100	-0.07	-0.02	.006
Delay/Support	F-value(1, 867.98):		32.8347			< .001
Political ideology * Delay/Support	F-value(1, 867.98):		9.9344			.002

Note: Random intercept effects (variance ± standard deviation): Participant (0.24 ± 0.49); Country (0.01 ± 0.08); Political ideology (0.01 ± 0.08); Residual (0.54 ± 0.74).

We decomposed the influence of political ideology on truth discrimination ability within each statement type (delay of climate action and support of climate action) with simple slopes. This analysis revealed that the more conservative participants were, the worse their ability to discriminate between true and false statements delaying climate action (*F*-ratio = 8.246, *p* = .009; see Figure D1, panel a). This is equivalent to a zero-order correlation of *r = -.14*, *z*(868) = -6.9495, *p* < .001, 95% CI[-0.20, -0.07]. The influence of political ideology did not extend to discrimination ability about statements supporting climate action (*F*-ratio = 0.09, *p* = .93). Equivalence tests (Lakens, 2017) confirmed that the associations between political ideology and truth discriminatory ability of statements supporting climate action was small enough to be practically meaningless—i.e., significantly smaller than *r* = 0.1; *z*(868) = 2.855, *p* = .002, *r* = -0.003, 90% CI[-0.06, 0.05].

Table D2. *Multilevel model for climate truth discriminatory ability (d'), disinformation condition.*

Predictor	Estimate	SE	t-value	95% Confidence Intervals		p
				Lower	Upper	
Intercept	0.55	0.12	4.638	0.32	0.79	< .001
Age	0.005	0.001	3.375	0.002	0.008	< .001
Gender		F-value(3, 845.1):	1.1191			.34
Political ideology	-0.05	0.02	-3.082	-0.08	-0.02	.007
Delay/Support		F-value(1, 853.01):	13.6013			< .001
Political ideology * Delay/Support		F-value(1, 853.01):	3.1024			.08

Note: Random intercept effects (variance ± standard deviation): Participant (0.04 ± 0.21); Country (0.00 ± 0.00); Political ideology (0.01 ± 0.12); Residual (0.54 ± 0.73).

As for the main analyses, we calculated the correlation between political ideology and truth discriminatory ability for statements delaying climate action and statements supporting climate action. This analysis suggested that the more a participant espoused a conservative ideology, the worse their truth discriminatory ability was about statements supporting climate action, $z(853) = -5.6247$, $p < .001$, $r = -0.09$, 95% CI[-0.16, -0.03]; and about statements delaying climate action, $z(853) = -7.3258$, $p < .001$, $r = -0.15$, 95% CI[-0.21, -0.07].
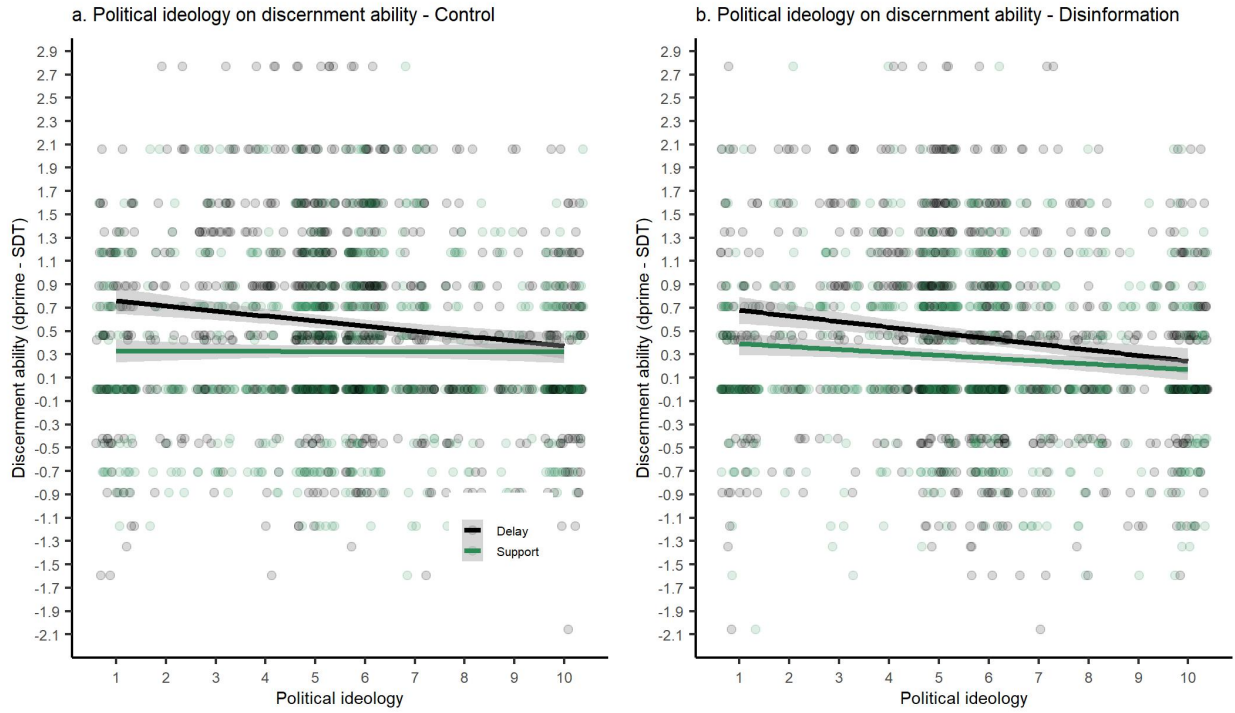
Figure D1. Results for the truth discernment task, Signal Detection Theory supplementary analysis. *The panel a. on the left side represents the truth discrimination ability (d') of participants in the passive control condition. The panel b. on the right side represents the truth discrimination ability (d') of participants in the disinformation condition. The x-axis represents political ideology, with increasing numbers representing a more conservative political ideology. The y-axis represents the discrimination ability (d') calculated through Signal Detection Theory. The black lines represent the truth discrimination ability for climate statements that argue for the delay of climate action; the green lines represent the truth discrimination ability for climate statements supporting climate action.*