Supplementary Materials: Simulated Data

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Author Note

All procedures performed in studies involving human participants were approved by the Institutional Research Ethics Committee and conducted in accordance with the Code of Professional Ethics of the Psychological Society of Ireland and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study. The authors declare that there are no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Abstract

Moral dumbfounding occurs when people maintain a moral judgment in the absence of supporting reasons. Drawing on dual-process approaches to moral judgment, one possible explanation for moral dumbfounding proposes that it occurs as a result of a conflict between intuitive and deliberative processes. Consistent with this explanation, previous research has shown that under manipulations designed to lead to more intuitive thinking rather than deliberative thinking (such as increased cognitive load), people are less likely to provide reasons for their judgments, and more likely to provide dumbfounded responses in a moral dumbfounding task. Building on this work the present research examines if dumbfounded responding can be reduced through experimental manipulations designed to facilitate deliberative thinking (over intuitive thinking). Drawing on construal-level theory, and the finding that distancing facilitates deliberative thinking, we predict that including a distancing manipulation in a moral dumbfounding task will increase reason-giving, and reduce dumbfounded responding. We propose a pre-registered study to test this prediction.

Keywords: moral dumbfounding, distancing, construal-level theory, dual-processes, reasons, intuitions

Supplementary Materials: Simulated Data

Analysis of Simulated Data

Temporal Distancing and Dumbfounding

Overview of Judgments. A total of 3377 participants (70.35%) rated the behavior of Julie and Mark as wrong initially, and 3262 participants (67.96%) rated the behavior as wrong at the end of the task. There was a significant difference between initial ratings (M = 3.3, SD = 1.3) and revised ratings (M = 3.4, SD = 1.4), $t(4799)$ = -3.29, p = .001, d = 0.05.

Distancing and Judgments Made. There was no difference in initial judgement depending on distance manipulation: $F(2, 4797) = 0.32$, p = .728 ${\eta_p}^2 = 0$, ($M_{\text{increased}}$ = 3.3, $SD_{\text{increased}}$ = 1.3, $M_{\text{decreased}}$ = 3.3, $SD_{\text{decreased}}$ = 1.3, M_{control} = 3.3, SD_{control} = 1.3). There was no difference in revised judgement depending on distance manipulation: $F(2, 4797) = 2.35$, p = .095, ${\eta_p}^2 = 0.001$, ($M_{\text{increased}}$ = 3.3, $SD_{\text{increased}}$ = 1.3, $M_{\text{decreased}}$ = 3.4, $SD_{\text{decreased}}$ = 1.4, M_{control} = 3.4, SD_{control} = 1.4).

Distancing and Reason-Giving/Dumbfounding. There was a significant association between temporal distance condition and response to the critical slide, $\chi^2(4, N = 4800) = 60.674$, $p < .001$, $V = 0.11$, the observed power was 1. The responses to the critical slide for the increased distance group (N = 1600) the decreased distance group (N = 1600), and the control group (N = 1600) are displayed in Figure 1.

Figure 1

Simulated Data: Responses to critical slide depending on temporal distance for the increased temporal distance group (future, N = 1,600), for the decreased temporal distance group (today, N = 1,600), and for the control group (N = 1,600) (error bars represent standard error of the proportion)

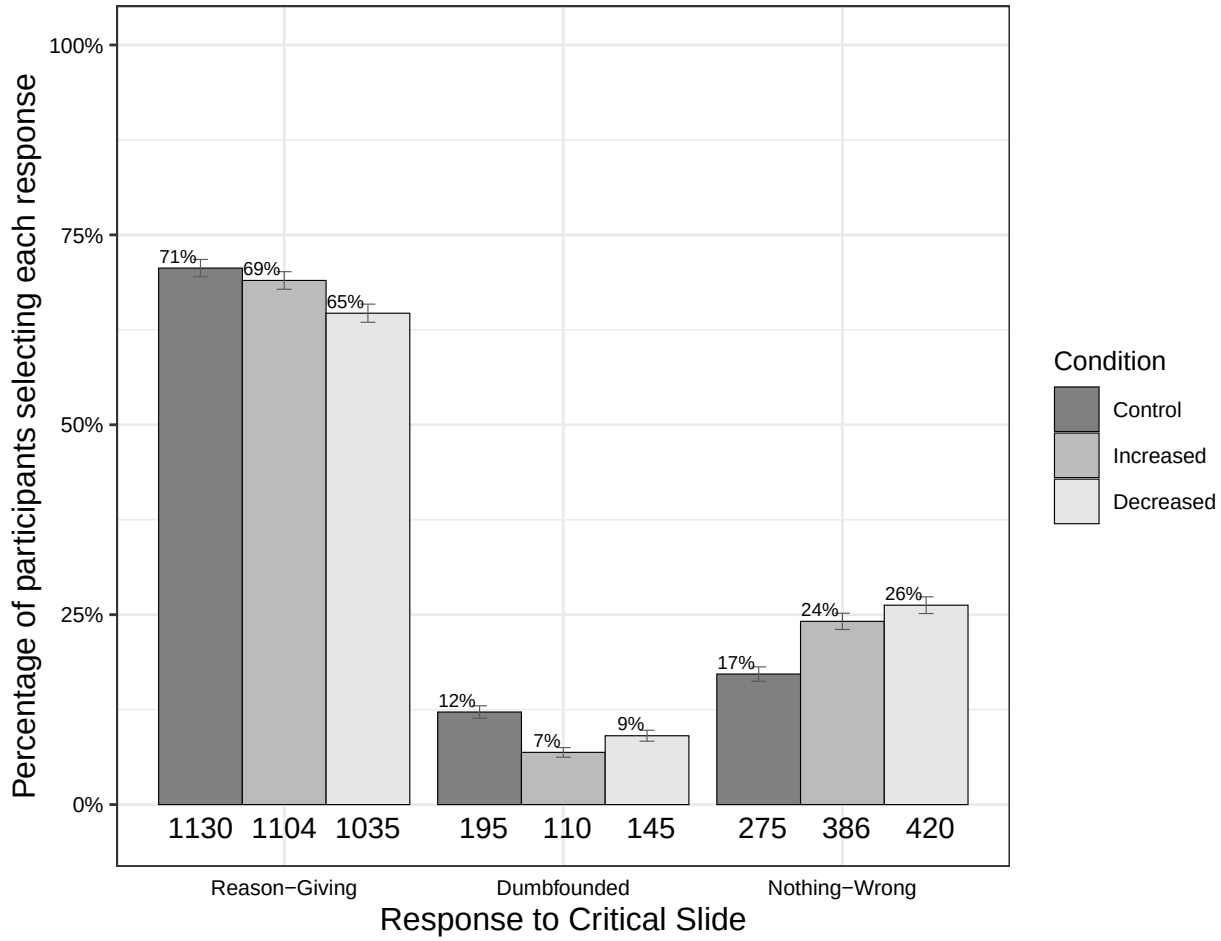


Table 1

Observed counts, expected counts, and standardised residuals for each response to the critical slide depending on temporal distancing

		Control	Increased	Decreased
Observed count	Reasons	1130	1104	1035
	Dumbfounded	195	110	145
	Nothing Wrong	275	386	420
Expected count	Reasons	1089.67	1089.67	1089.67
	Dumbfounded	150	150	150
	Nothing Wrong	360.33	360.33	360.33
Standardised residuals	Reasons	2.65*	0.94	-3.59**
	Dumbfounded	4.73**	-4.2**	-0.53
	Nothing Wrong	-6.25**	1.88	4.37**

Note. * = sig. at $p < .05$; ** = sig. at $p < .001$

Psychological Distancing and Dumbfounding

Overview of Judgments. A total of 3377 participants (70.35%) rated the behavior of Julie and Mark as wrong initially, and 3262 participants (67.96%) rated the behavior as wrong at the end of the task. There was a significant difference between initial ratings (M = 3.3, SD = 1.3) and revised ratings (M = 3.4, SD = 1.4), $t(4799)$ = -3.29, p = .001, d = 0.05.

Distancing and Judgments Made. There was no difference in initial judgement depending on distance manipulation: $t(4792.43) = 1.33$, p = .183, d = 0.04, ($M_{\text{increased}}$ = 3.3, $SD_{\text{increased}}$ = 1.3, $M_{\text{decreased}}$ = 3.3, $SD_{\text{decreased}}$ = 1.3). There was no difference in revised judgement depending on distance manipulation: $t(4797.43) = 1.4$, p = .161, d = 0.04, ($M_{\text{increased}}$ = 3.4, $SD_{\text{increased}}$ = 1.4, $M_{\text{decreased}}$ = 3.4, $SD_{\text{decreased}}$ = 1.4).

Distancing and Reason-Giving/Dumbfounding. There was a significant association between temporal distance condition and response to the critical slide, $\chi^2(2, N = 4800) = 22.232$, $p < .001$, V = 0.07, the observed power was 0.99. The responses to the critical slide for the increased distance group (N = 2400) and the decreased distance group (N = 2400) are displayed in Figure 2.

Figure 2

Simulated Data: Responses to critical slide depending on psychological distance for the increased psychological distance group (future, N = 2,400), and for the decreased psychological distance group (today, N = 2,400), (error bars represent standard error of the proportion)

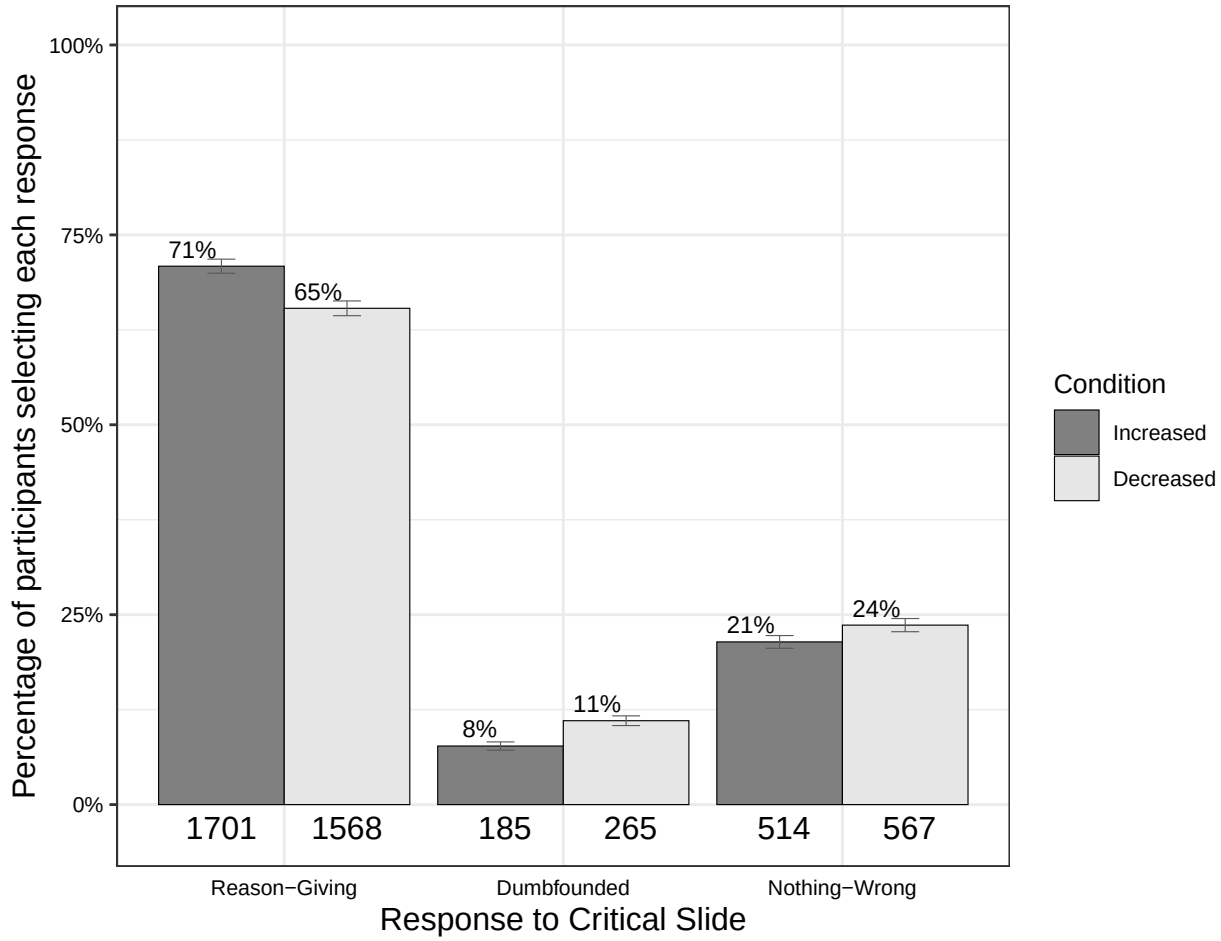


Table 2

Observed counts, expected counts, and standardised residuals for each response to the critical slide depending on psychological distancing

		Increased	Decreased
Observed count	Reasons	1701	1568
	Dumbfounded	185	265
	Nothing Wrong	514	567
Expected count	Reasons	1634.5	1634.5
	Dumbfounded	225	225
	Nothing Wrong	540.5	540.5
Standardised residuals	Reasons	4.12**	-4.12**
	Dumbfounded	-3.96**	3.96**
	Nothing Wrong	-1.83	1.83

Note. * = sig. at $p < .05$; ** = sig. at $p < .001$

Distancing and Dumbfounding

Without Scenario

Overall the model significantly predicted responses to the critical slide $\chi^2(10, N = 4800) = 106.78$, $p < .001$, The observed power was 1. The model explained between 0.74% (Cox and Snell R square) and 1.76% (Nadelkerke R squared) of the variance in responses to the critical slide. For scenarios in the future, participants were more likely to provide reasons than to present as dumbfounded Wald = -9.94, $p < .001$, odds ratio = 0.35, 95% CI [0.23, 0.53].

Table 3

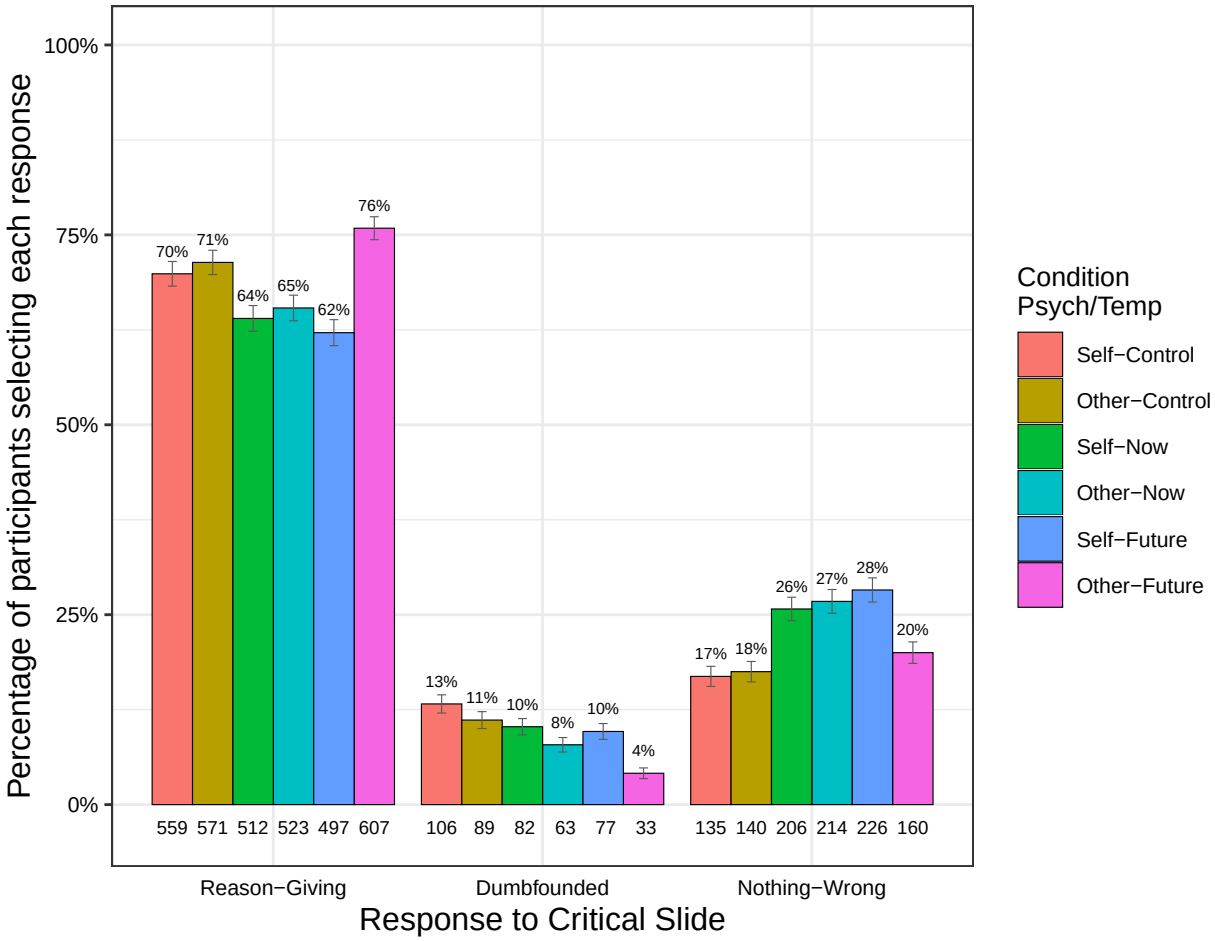
Predictors of each response with reason-giving as the reference response

Response	Term	*b*	*S.E.*	*z*	Wald	*p*	*O.R.*	Lower	Upper
D	(Intercept)	-1.86	0.11	-16.31	-32.62	< .001**	0.16	0.12	0.19
D	Psy-Self	0.20	0.16	1.26	2.52	0.208	1.22	0.90	1.65
D	Temp-Future	-1.05	0.21	-4.97	-9.94	< .001**	0.35	0.23	0.53
D	Temp-Now	-0.26	0.18	-1.47	-2.94	0.142	0.77	0.55	1.09
D	Psy-Self × Temp-Future	0.85	0.27	3.19	6.38	.001*	2.34	1.39	3.95
D	Psy-Self × Temp-Now	0.09	0.24	0.37	0.75	0.708	1.09	0.69	1.74
NW	(Intercept)	-1.41	0.09	-14.91	-29.81	< .001**	0.25	0.20	0.29
NW	Psy-Self	-0.02	0.13	-0.11	-0.22	0.911	0.99	0.76	1.28
NW	Temp-Future	0.07	0.13	0.56	1.12	0.576	1.08	0.83	1.39
NW	Temp-Now	0.51	0.12	4.12	8.23	< .001**	1.67	1.31	2.13
NW	Psy-Self × Temp-Future	0.56	0.18	3.11	6.22	.002*	1.75	1.23	2.49
NW	Psy-Self × Temp-Now	0.00	0.18	-0.01	-0.02	0.992	1.00	0.71	1.41

Note. * = sig. at $p < .05$; ** = sig. at $p < .001$; D = dumbfounded, NW = nothing-wrong

Figure 3

Simulated Data: Responses to critical slide depending on both manipulations. Sample sizes as follows: Self-Control, N = 800, Other-Control, N = 800, Self-Now, N = 800, Other-Now, N = 800, Self-Future, N = 800, Other-Future, N = 800, (error bars represent standard error of the proportion)



Including Scenario

Overall the model significantly predicted responses to the critical slide $\chi^2(16, N = 4800) = 177.51$, $p < .001$, The observed power was 1. The model explained between 1.23% (Cox and Snell R square) and 2.91% (Nadelkerke R squared) of the variance in responses to the critical slide. For scenarios in the future, participants were more likely to provide reasons than to present as dumbfounded Wald = -9.83, $p < .001$, odds ratio = 0.35, 95% CI [0.23, 0.53].

Table 4

Predictors of each response with reason-giving as the reference response

Response	Term	*b*	*S.E.*	*z*	Wald	*p*	*O.R.*	Lower	Upper
D	(Intercept)	-1.95	0.14	-13.57	-27.15	< .001**	0.14	0.11	0.19
D	Psy-Self	0.21	0.16	1.34	2.68	0.18	1.23	0.91	1.68
D	Temp-Future	-1.05	0.21	-4.91	-9.83	< .001**	0.35	0.23	0.53
D	Temp-Now	-0.26	0.18	-1.47	-2.94	0.141	0.77	0.55	1.09
D	Scenario-Jennifer	0.05	0.14	0.35	0.71	0.724	1.05	0.79	1.39
D	Scenario-Julie and Mark	0.54	0.13	4.06	8.12	< .001**	1.72	1.32	2.24
D	Scenario-Trolley	-0.48	0.17	-2.86	-5.73	.004*	0.62	0.44	0.86
D	Psy-Self × Temp-Future	0.82	0.27	3.07	6.15	.002*	2.28	1.35	3.85
D	Psy-Self × Temp-Now	0.07	0.24	0.30	0.60	0.765	1.07	0.67	1.71
NW	(Intercept)	-1.36	0.11	-12.38	-24.76	< .001**	0.26	0.21	0.32
NW	Psy-Self	-0.01	0.13	-0.10	-0.21	0.917	0.99	0.76	1.28
NW	Temp-Future	0.08	0.13	0.64	1.28	0.521	1.09	0.84	1.40
NW	Temp-Now	0.52	0.12	4.15	8.30	< .001**	1.68	1.31	2.14
NW	Scenario-Jennifer	-0.36	0.10	-3.56	-7.12	< .001**	0.69	0.57	0.85
NW	Scenario-Julie and Mark	0.08	0.10	0.85	1.69	0.397	1.09	0.90	1.31
NW	Scenario-Trolley	0.03	0.10	0.30	0.61	0.762	1.03	0.85	1.25
NW	Psy-Self × Temp-Future	0.55	0.18	3.07	6.13	.002*	1.74	1.22	2.48
NW	Psy-Self × Temp-Now	0.01	0.18	0.07	0.13	0.946	1.01	0.71	1.43

Note. * = sig. at $p < .05$; ** = sig. at $p < .001$; D = dumbfounded, NW = nothing-wrong

Results for Each Scenario

Julie and Mark

Temporal Distancing and Dumbfounding.

Overview of Judgments. A total of 841 participants (69.16%) rated the behavior of Julie and Mark as wrong initially, and 834 participants (68.59%) rated the behavior as wrong at the end of the task. There was a significant difference between initial ratings (M = 3.3, SD = 1.3) and revised ratings (M = 3.3, SD = 1.4), $t(1215)$ = -0.42, p = .671, d = 0.01.

Distancing and Judgments Made. There was no difference in initial judgement depending on distance manipulation: $F(2, 1213) = 1.93$, p = .145 ${\eta_p}^2$ = 0.003, ($M_{\text{increased}}$ = 3.4, $SD_{\text{increased}}$ = 1.4, $M_{\text{decreased}}$ = 3.3, $SD_{\text{decreased}}$ = 1.3, M_{control} = 3.2, SD_{control} = 1.3). There was no difference in revised judgement depending on distance manipulation: $F(2, 1213) = 1.11$, p = .330, ${\eta_p}^2$ = 0.002, ($M_{\text{increased}}$ = 3.3, $SD_{\text{increased}}$ = 1.3, $M_{\text{decreased}}$ = 3.3, $SD_{\text{decreased}}$ = 1.4, M_{control} = 3.4, SD_{control} = 1.4).

Distancing and Reason-Giving/Dumbfounding. There was a significant association between temporal distance condition and response to the critical slide, $\chi^2(4, N = 1216) = 21.939$, $p < .001$, V = 0.13, the observed power was 0.98. The responses to the critical slide for the increased distance group (N = 399) the decreased distance group (N = 409), and the control group (N = 408) are displayed in Figure 4.

Table 5

Observed counts, expected counts, and standardised residuals for each response to the critical slide depending on temporal distancing

		Control	Increased	Decreased
Observed count	Reasons	274	253	233
	Dumbfounded	65	40	61
	Nothing Wrong	69	106	115
Expected count	Reasons	255	249.38	255.62
	Dumbfounded	55.7	54.47	55.83
	Nothing Wrong	97.3	95.16	97.54
Standardised residuals	Reasons	2.38*	0.46	-2.84*
	Dumbfounded	1.65	-2.57*	0.91
	Nothing Wrong	-4.03**	1.55	2.49*

Note. * = sig. at $p < .05$; ** = sig. at $p < .001$

Psychological Distancing and Dumbfounding.

Overview of Judgments. A total of 841 participants (69.16%) rated the behavior of Julie and Mark as wrong initially, and 834 participants (68.59%) rated the behavior as wrong at the end of the task. There was a significant difference between initial ratings (M = 3.3, SD = 1.3) and revised ratings (M = 3.3, SD = 1.4), $t(1215)$ = -0.42, p = .671, d = 0.01.

Distancing and Judgments Made. There was no difference in initial judgement depending on distance manipulation: $t(1210.02) = 0.46$, p = .647, d = 0.03, ($M_{\text{increased}}$ = 3.3, $SD_{\text{increased}}$ = 1.4, $M_{\text{decreased}}$ = 3.3, $SD_{\text{decreased}}$ = 1.3). There was no difference in revised judgement depending on distance manipulation: $t(1214) = 0.38$, p = .704, d = 0.02, ($M_{\text{increased}}$ = 3.4, $SD_{\text{increased}}$ = 1.3, $M_{\text{decreased}}$ = 3.3, $SD_{\text{decreased}}$ = 1.4).

Distancing and Reason-Giving/Dumbfounding. There was a significant association between temporal distance condition and response to the critical slide, $\chi^2(2, N = 1216) = 7.249$, p = .027, V = 0.08, the observed power was 0.61. The responses to the critical slide for the increased distance group (N = 598) and the decreased distance group (N = 618) are displayed in Figure 5.

Table 6

Observed counts, expected counts, and standardised residuals for each response to the critical slide depending on psychological distancing

		Increased	Decreased
Observed count	Reasons	395	365
	Dumbfounded	69	97
	Nothing Wrong	134	156
Expected count	Reasons	373.75	386.25
	Dumbfounded	81.63	84.37
	Nothing Wrong	142.62	147.38
Standardised residuals	Reasons	2.52*	-2.52*
	Dumbfounded	-2.11*	2.11*
	Nothing Wrong	-1.16	1.16

Note. * = sig. at $p < .05$; ** = sig. at $p < .001$

Combined Effects of both Distance Manipulations

A multinomial logistic regression was conducted to examine the combined effects of both temporal and psychological distance on responses to the critical slide. Overall the model significantly predicted responses to the critical slide $\chi^2(10, N = 1216) = 39.5$, $p < .001$, The observed power was 1. The model explained between 1.08% (Cox and Snell R square) and 2.37% (Nadelkerke R squared) of the variance in responses to the critical slide. For scenarios in the future, participants were more likely to provide reasons than to present as dumbfounded Wald = -5.71, $p = .004$, odds ratio = 0.36, 95% CI [0.18, 0.73].

Table 7

Predictors of each response with reason-giving as the reference response

Response	Term	*b*	*S.E.*	*z*	Wald	*p*	*O.R.*	Lower	Upper
D	(Intercept)	-1.39	0.19	-7.27	-14.55	< .001**	0.25	0.17	0.36
D	Psy-Self	-0.09	0.28	-0.33	-0.67	0.738	0.91	0.53	1.57
D	Temp-Future	-1.02	0.36	-2.85	-5.71	.004*	0.36	0.18	0.73
D	Temp-Now	-0.29	0.30	-0.98	-1.96	0.327	0.75	0.42	1.34
D	Psy-Self × Temp-Future	1.06	0.46	2.30	4.61	.021*	2.88	1.17	7.09
D	Psy-Self × Temp-Now	0.72	0.40	1.79	3.58	0.073	2.06	0.93	4.55
NW	(Intercept)	-1.42	0.19	-7.34	-14.68	< .001**	0.24	0.16	0.35
NW	Psy-Self	0.09	0.27	0.32	0.65	0.747	1.09	0.64	1.85
NW	Temp-Future	0.24	0.26	0.91	1.82	0.364	1.27	0.76	2.13
NW	Temp-Now	0.70	0.25	2.79	5.59	.005*	2.01	1.23	3.28
NW	Psy-Self × Temp-Future	0.49	0.36	1.37	2.75	0.169	1.64	0.81	3.30
NW	Psy-Self × Temp-Now	-0.05	0.35	-0.13	-0.26	0.898	0.96	0.48	1.91

Note. * = sig. at $p < .05$; ** = sig. at $p < .001$; D = dumbfounded, NW = nothing-wrong

Jennifer

Temporal Distancing and Dumbfounding.

Overview of Judgments. A total of 855 participants (71.19%) rated the behavior of Julie and Mark as wrong initially, and 818 participants (68.11%) rated the behavior as wrong at the end of the task. There was a significant difference between initial ratings (M = 3.3, SD = 1.3) and revised ratings (M = 3.4, SD = 1.4), $t(1200)$ = -1.73, p = .084, d = 0.05.

Distancing and Judgments Made. There was no difference in initial judgement depending on distance manipulation: $F(2, 1198) = 0.75$, p = .473 ${\eta_p}^2$ = 0.001, ($M_{\text{increased}}$ = 3.2, $SD_{\text{increased}}$ = 1.4, $M_{\text{decreased}}$ = 3.3, $SD_{\text{decreased}}$ = 1.3, M_{control} = 3.3, SD_{control} = 1.3). There was no difference in revised judgement depending on distance manipulation: $F(2, 1198) = 0.76$, p = .469, ${\eta_p}^2 = 0.001$, ($M_{\text{increased}}$ = 3.3, $SD_{\text{increased}}$ = 1.3, $M_{\text{decreased}}$ = 3.4, $SD_{\text{decreased}}$ = 1.4, M_{control} = 3.4, SD_{control} = 1.4).

Distancing and Reason-Giving/Dumbfounding. There was a significant association between temporal distance condition and response to the critical slide, $\chi^2(4, N = 1201) = 29.055$, $p < .001$, $V = 0.16$, the observed power was 1. The responses to the critical slide for the increased distance group (N = 403) the decreased distance group (N = 421), and the control group (N = 377) are displayed in Figure 4.

Table 8

Observed counts, expected counts, and standardised residuals for each response to the critical slide depending on temporal distancing

		Control	Increased	Decreased
Observed count	Reasons	275	312	285
	Dumbfounded	53	26	36
	Nothing Wrong	49	65	100
Expected count	Reasons	273.73	292.6	305.67
	Dumbfounded	36.1	38.59	40.31
	Nothing Wrong	67.18	71.81	75.02
Standardised residuals	Reasons	0.18	2.66*	-2.8*
	Dumbfounded	3.57**	-2.61*	-0.89
	Nothing Wrong	-2.95*	-1.09	3.95**

Note. * = sig. at $p < .05$; ** = sig. at $p < .001$

Psychological Distancing and Dumbfounding.

Overview of Judgments. A total of 855 participants (71.19%) rated the behavior of Julie and Mark as wrong initially, and 818 participants (68.11%) rated the behavior as wrong at the end of the task. There was a significant difference between initial ratings (M = 3.3, SD = 1.3) and revised ratings (M = 3.4, SD = 1.4), $t(1200)$ = -1.73, p = .084, d = 0.05.

Distancing and Judgments Made. There was no difference in initial judgement depending on distance manipulation: $t(1190.18) = 1.59$, p = .111, d = 0.09, ($M_{\text{increased}}$ = 3.4, $SD_{\text{increased}}$ = 1.3, $M_{\text{decreased}}$ = 3.2, $SD_{\text{decreased}}$ = 1.3). There was no difference in revised judgement depending on distance manipulation: $t(1198.44) = 1.2$, p = .230, d = 0.07, ($M_{\text{increased}}$ = 3.4, $SD_{\text{increased}}$ = 1.3, $M_{\text{decreased}}$ = 3.3, $SD_{\text{decreased}}$ = 1.4).

Distancing and Reason-Giving/Dumbfounding. There was a significant association between temporal distance condition and response to the critical slide, $\chi^2(2, N = 1201) = 14.897$, $p < .001$, V = 0.11, the observed power was 0.92. The responses to the critical slide for the increased distance group (N = 590) and the decreased distance group (N = 611) are displayed in Figure 5.

Table 9

Observed counts, expected counts, and standardised residuals for each response to the critical slide depending on psychological distancing

		Increased	Decreased
Observed count	Reasons	454	418
	Dumbfounded	39	76
	Nothing Wrong	97	117
Expected count	Reasons	428.38	443.62
	Dumbfounded	56.49	58.51
	Nothing Wrong	105.13	108.87
Standardised residuals	Reasons	3.32**	-3.32**
	Dumbfounded	-3.43**	3.43**
	Nothing Wrong	-1.23	1.23

Note. * = sig. at $p < .05$; ** = sig. at $p < .001$

Combined Effects of both Distance Manipulations

A multinomial logistic regression was conducted to examine the combined effects of both temporal and psychological distance on responses to the critical slide. Overall the model significantly predicted responses to the critical slide $\chi^2(10, N = 1201) = 55.38$, $p < .001$, The observed power was 1. The model explained between 1.53% (Cox and Snell R square) and 3.82% (Nadelkerke R squared) of the variance in responses to the critical slide. For scenarios in the future, participants were more likely to provide reasons than to present as dumbfounded Wald = -4, $p = .046$, odds ratio = 0.43, 95% CI [0.18, 0.98].

Table 10

Predictors of each response with reason-giving as the reference response

Response	Term	*b*	*S.E.*	*z*	Wald	*p*	*O.R.*	Lower	Upper
D	(Intercept)	-2.14	0.26	-8.33	-16.66	< .001**	0.12	0.07	0.20
D	Psy-Self	0.84	0.32	2.66	5.31	.008*	2.33	1.25	4.34
D	Temp-Future	-0.85	0.43	-2.00	-4.00	.046*	0.43	0.18	0.98
D	Temp-Now	-0.17	0.39	-0.45	-0.89	0.655	0.84	0.39	1.80
D	Psy-Self × Temp-Future	0.09	0.53	0.17	0.33	0.869	1.09	0.38	3.10
D	Psy-Self × Temp-Now	-0.44	0.49	-0.90	-1.80	0.369	0.65	0.25	1.67
NW	(Intercept)	-1.75	0.22	-8.08	-16.16	< .001**	0.17	0.11	0.27
NW	Psy-Self	0.05	0.31	0.17	0.35	0.861	1.06	0.57	1.94
NW	Temp-Future	-0.39	0.32	-1.24	-2.47	0.216	0.68	0.36	1.26
NW	Temp-Now	0.81	0.27	2.97	5.93	.003*	2.24	1.32	3.83
NW	Psy-Self × Temp-Future	0.98	0.42	2.32	4.64	.020*	2.67	1.16	6.13
NW	Psy-Self × Temp-Now	-0.26	0.39	-0.66	-1.32	0.509	0.77	0.36	1.66

Note. * = sig. at $p < .05$; ** = sig. at $p < .001$; D = dumbfounded, NW = nothing-wrong

Trolley

Temporal Distancing and Dumbfounding.

Overview of Judgments. A total of 795 participants (71.17%) rated the behavior of Julie and Mark as wrong initially, and 738 participants (66.07%) rated the behavior as wrong at the end of the task. There was a significant difference between initial ratings (M = 3.3, SD = 1.3) and revised ratings (M = 3.4, SD = 1.4), $t(1116)$ = -2.61, p = .009, d = 0.08.

Distancing and Judgments Made. There was no difference in initial judgement depending on distance manipulation: $F(2, 1114) = 0.16$, p = .851 ${\eta_p}^2 = 0$, ($M_{\text{increased}} = 3.3$, $SD_{\text{increased}} = 1.3$, $M_{\text{decreased}} = 3.3$, $SD_{\text{decreased}} = 1.3$, $M_{\text{control}} = 3.3$, $SD_{\text{control}} = 1.3$). There was no difference in revised judgement depending on distance manipulation: $F(2, 1114) = 1.58$, p = .206, ${\eta_p}^2 = 0.003$, ($M_{\text{increased}} = 3.4$, $SD_{\text{increased}} = 1.3$, $M_{\text{decreased}} = 3.5$, $SD_{\text{decreased}} = 1.4$, $M_{\text{control}} = 3.4$, $SD_{\text{control}} = 1.4$).

Distancing and Reason-Giving/Dumbfounding. There was a significant association between temporal distance condition and response to the critical slide, $\chi^2(4, N = 1117) = 24.288$, $p < .001$, $V = 0.15$, the observed power was 0.99. The responses to the critical slide for the increased distance group (N = 373) the decreased distance group (N = 359), and the control group (N = 385) are displayed in Figure 4.

Table 11

Observed counts, expected counts, and standardised residuals for each response to the critical slide depending on temporal distancing

		Control	Increased	Decreased
Observed count	Reasons	274	252	252.00
	Dumbfounded	36	12	13.00
	Nothing Wrong	75	109	94.00
Expected count	Reasons	268.16	259.8	250.05
	Dumbfounded	21.03	20.37	19.61
	Nothing Wrong	95.82	92.83	89.35
Standardised residuals	Reasons	0.8	-1.08	0.27
	Dumbfounded	4.15**	-2.34*	-1.86
	Nothing Wrong	-3.03*	2.37*	0.69

Note. * = sig. at $p < .05$; ** = sig. at $p < .001$

Psychological Distancing and Dumbfounding.

Overview of Judgments. A total of 795 participants (71.17%) rated the behavior of Julie and Mark as wrong initially, and 738 participants (66.07%) rated the behavior as wrong at the end of the task. There was a significant difference between initial ratings (M = 3.3, SD = 1.3) and revised ratings (M = 3.4, SD = 1.4), $t(1116)$ = -2.61, p = .009, d = 0.08.

Distancing and Judgments Made. There was no difference in initial judgement depending on distance manipulation: $t(1114.17) = 0.01$, $p = .996$, $d = 0$, ($M_{\text{increased}} = 3.3$, $SD_{\text{increased}} = 1.3$, $M_{\text{decreased}} = 3.3$, $SD_{\text{decreased}} = 1.3$). There was no difference in revised judgement depending on distance manipulation: $t(1112.44) = 0.02$, $p = .982$, $d = 0$, ($M_{\text{increased}} = 3.4$, $SD_{\text{increased}} = 1.3$, $M_{\text{decreased}} = 3.4$, $SD_{\text{decreased}} = 1.4$).

Distancing and Reason-Giving/Dumbfounding. There was a significant association between temporal distance condition and response to the critical slide, $\chi^2(2, N = 1117) = 1.009$, $p = .604$, $V = 0.03$, the observed power was 0.12. The responses to the critical slide for the increased distance group (N = 558) and the decreased distance group (N = 559) are displayed in Figure 5.

Table 12

Observed counts, expected counts, and standardised residuals for each response to the critical slide depending on psychological distancing

		Increased	Decreased
Observed count	Reasons	454	418
	Dumbfounded	39	76
	Nothing Wrong	97	117
Expected count	Reasons	428.38	443.62
	Dumbfounded	56.49	58.51
	Nothing Wrong	105.13	108.87
Standardised residuals	Reasons	3.32**	-3.32**
	Dumbfounded	-3.43**	3.43**
	Nothing Wrong	-1.23	1.23

Note. * = sig. at $p < .05$; ** = sig. at $p < .001$

Combined Effects of both Distance Manipulations

A multinomial logistic regression was conducted to examine the combined effects of both temporal and psychological distance on responses to the critical slide. Overall the model significantly predicted responses to the critical slide $\chi^2(10, N = 1117) = 29.85$, $p < .001$, The observed power was 0.98. The model explained between 0.89% (Cox and Snell R square) and 2.24% (Nadelkerke R squared) of the variance in responses to the critical slide. For scenarios in the future, participants were more likely to provide reasons than to present as dumbfounded Wald = -5.63, $p = .005$, odds ratio = 0.17, 95% CI [0.05, 0.58].

Table 13

Predictors of each response with reason-giving as the reference response

Response	Term	*b*	*S.E.*	*z*	Wald	*p*	*O.R.*	Lower	Upper
D	(Intercept)	-2.00	0.26	-7.72	-15.44	< .001**	0.14	0.08	0.23
D	Psy-Self	-0.06	0.36	-0.18	-0.36	0.856	0.94	0.47	1.88
D	Temp-Future	-1.80	0.64	-2.81	-5.63	.005*	0.17	0.05	0.58
D	Temp-Now	-0.77	0.45	-1.72	-3.44	0.085	0.46	0.19	1.11
D	Psy-Self × Temp-Future	1.27	0.77	1.66	3.33	0.096	3.58	0.80	16.04
D	Psy-Self × Temp-Now	-0.39	0.68	-0.57	-1.14	0.568	0.68	0.18	2.58
NW	(Intercept)	-1.19	0.19	-6.43	-12.86	< .001**	0.30	0.21	0.44
NW	Psy-Self	-0.20	0.26	-0.78	-1.55	0.438	0.82	0.49	1.36
NW	Temp-Future	0.27	0.25	1.10	2.20	0.272	1.31	0.81	2.12
NW	Temp-Now	0.34	0.25	1.36	2.72	0.173	1.40	0.86	2.27
NW	Psy-Self × Temp-Future	0.37	0.35	1.06	2.12	0.289	1.45	0.73	2.86
NW	Psy-Self × Temp-Now	-0.08	0.36	-0.23	-0.46	0.818	0.92	0.46	1.85

Note. * = sig. at $p < .05$; ** = sig. at $p < .001$; D = dumbfounded, NW = nothing-wrong

Heinz

Temporal Distancing and Dumbfounding.

Overview of Judgments. A total of 886 participants (69.98%) rated the behavior of Julie and Mark as wrong initially, and 872 participants (68.88%) rated the behavior as wrong at the end of the task. There was a significant difference between initial ratings (M = 3.3, SD = 1.3) and revised ratings (M = 3.4, SD = 1.4), $t(1265)$ = -1.85, p = .065, d = 0.05.

Distancing and Judgments Made. There was no difference in initial judgement depending on distance manipulation: $F(2, 1263) = 2.64$, p = .072 ${\eta_p}^2$ = 0.004, ($M_{\text{increased}}$ = 3.2, $SD_{\text{increased}}$ = 1.3, $M_{\text{decreased}}$ = 3.3, $SD_{\text{decreased}}$ = 1.4, M_{control} = 3.4, SD_{control} = 1.4). There was no difference in revised judgement depending on distance manipulation: $F(2, 1263) = 1.18$, p = .306, ${\eta_p}^2$ = 0.002, ($M_{\text{increased}}$ = 3.4, $SD_{\text{increased}}$ = 1.4, $M_{\text{decreased}}$ = 3.5, $SD_{\text{decreased}}$ = 1.5, M_{control} = 3.3, SD_{control} = 1.4).

Distancing and Reason-Giving/Dumbfounding. There was a significant association between temporal distance condition and response to the critical slide, $\chi^2(4, N = 1266) = 8.58$, p = .072, V = 0.08, the observed power was 0.69. The responses to the critical slide for the increased distance group (N = 425) the decreased distance group (N = 411), and the control group (N = 430) are displayed in Figure 4.

Table 14

Observed counts, expected counts, and standardised residuals for each response to the critical slide depending on temporal distancing

		Control	Increased	Decreased
Observed count	Reasons	274	252	252.00
	Dumbfounded	36	12	13.00
	Nothing Wrong	75	109	94.00
Expected count	Reasons	268.16	259.8	250.05
	Dumbfounded	21.03	20.37	19.61
	Nothing Wrong	95.82	92.83	89.35
Standardised residuals	Reasons	0.8	-1.08	0.27
	Dumbfounded	4.15**	-2.34*	-1.86
	Nothing Wrong	-3.03*	2.37*	0.69

Note. * = sig. at $p < .05$; ** = sig. at $p < .001$

Psychological Distancing and Dumbfounding.

Overview of Judgments. A total of 886 participants (69.98%) rated the behavior of Julie and Mark as wrong initially, and 872 participants (68.88%) rated the behavior as wrong at the end of the task. There was a significant difference between initial ratings ($M = 3.3$, $SD = 1.3$) and revised ratings ($M = 3.4$, $SD = 1.4$), $t(1265) =$ -1.85, $p = .065$, $d = 0.05$.

Distancing and Judgments Made. There was no difference in initial judgement depending on distance manipulation: $t(1262.64) = 0.61$, $p = .543$, $d = 0.03$, ($M_{\text{increased}} = 3.3$, $SD_{\text{increased}} = 1.4$, $M_{\text{decreased}} = 3.3$, $SD_{\text{decreased}} = 1.3$). There was no difference in revised judgement depending on distance manipulation: $t(1263.37) = 1.15$, $p = .251$, $d = 0.06$, ($M_{\text{increased}} = 3.4$, $SD_{\text{increased}} = 1.4$, $M_{\text{decreased}} = 3.3$, $SD_{\text{decreased}} =$ 1.4).

Distancing and Reason-Giving/Dumbfounding. There was a significant association between temporal distance condition and response to the critical slide, $\chi^2(2, N = 1266) = 7.859$, $p = .020$, $V = 0.08$, the observed power was 0.65. The responses to the critical slide for the increased distance group ($N = 654$) and the decreased distance group ($N = 612$) are displayed in Figure 5.

Table 15

Observed counts, expected counts, and standardised residuals for each response to the critical slide depending on psychological distancing

		Increased	Decreased
Observed count	Reasons	454	418
	Dumbfounded	39	76
	Nothing Wrong	97	117
Expected count	Reasons	428.38	443.62
	Dumbfounded	56.49	58.51
	Nothing Wrong	105.13	108.87
Standardised residuals	Reasons	3.32**	-3.32**
	Dumbfounded	-3.43**	3.43**
	Nothing Wrong	-1.23	1.23

Note. * = sig. at $p < .05$; ** = sig. at $p < .001$

Combined Effects of both Distance Manipulations

A multinomial logistic regression was conducted to examine the combined effects of both temporal and psychological distance on responses to the critical slide. Overall the model significantly predicted responses to the critical slide $\chi^2(10, N = 1266) = 24.58$, $p = .006$, The observed power was 0.95. The model explained between 0.65% (Cox and Snell R square) and 1.54% (Nadelkerke R squared) of the variance in responses to the critical slide. For scenarios in the future, participants were more likely to provide reasons than to present as dumbfounded Wald = -3.98, $p = .047$, odds ratio = 0.44, 95% CI [0.2, 0.99].

Table 16

Predictors of each response with reason-giving as the reference response

Response	Term	*b*	*S.E.*	*z*	Wald	*p*	*O.R.*	Lower	Upper
D	(Intercept)	-2.06	0.23	-8.90	-17.79	< .001**	0.13	0.08	0.20
D	Psy-Self	0.10	0.33	0.30	0.61	0.761	1.11	0.58	2.12
D	Temp-Future	-0.82	0.41	-1.99	-3.98	.047*	0.44	0.20	0.99
D	Temp-Now	0.06	0.34	0.17	0.34	0.865	1.06	0.55	2.05
D	Psy-Self × Temp-Future	1.08	0.53	2.05	4.09	.041*	2.95	1.05	8.32
D	Psy-Self × Temp-Now	-0.14	0.49	-0.29	-0.59	0.768	0.87	0.33	2.26
NW	(Intercept)	-1.32	0.17	-7.79	-15.58	< .001**	0.27	0.19	0.37
NW	Psy-Self	0.00	0.25	0.01	0.03	0.989	1.00	0.62	1.64
NW	Temp-Future	0.05	0.24	0.20	0.39	0.844	1.05	0.66	1.68
NW	Temp-Now	0.26	0.24	1.12	2.23	0.264	1.30	0.82	2.07
NW	Psy-Self × Temp-Future	0.55	0.34	1.61	3.22	0.107	1.73	0.89	3.35
NW	Psy-Self × Temp-Now	0.36	0.34	1.07	2.14	0.286	1.43	0.74	2.78

Note. * = sig. at $p < .05$; ** = sig. at $p < .001$; D = dumbfounded, NW = nothing-wrong

Plots: All Scenarios

Figure 4

Temporal distance and reason-giving for each Scenario

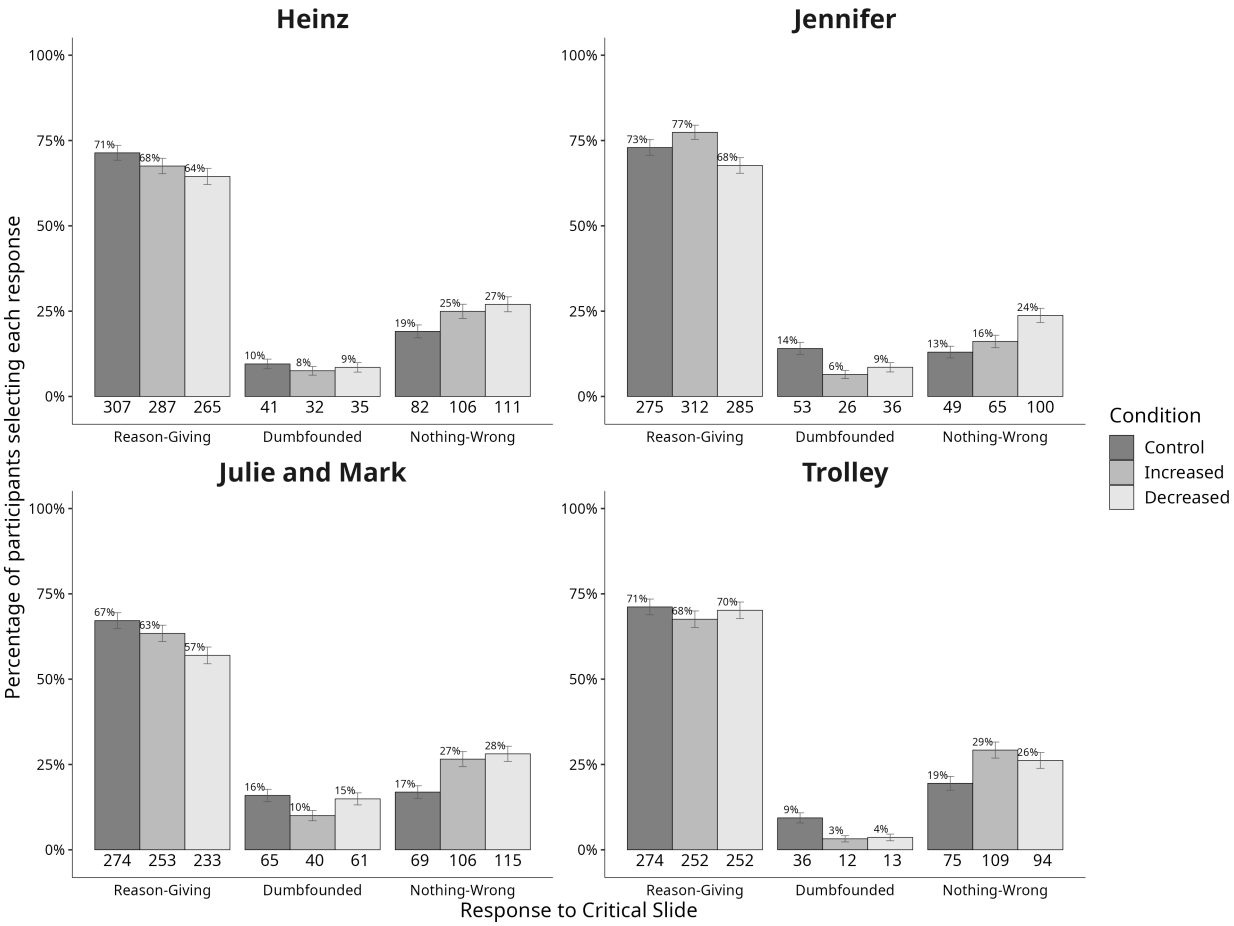


Figure 5

Psychological distance and reason-giving for each Scenario

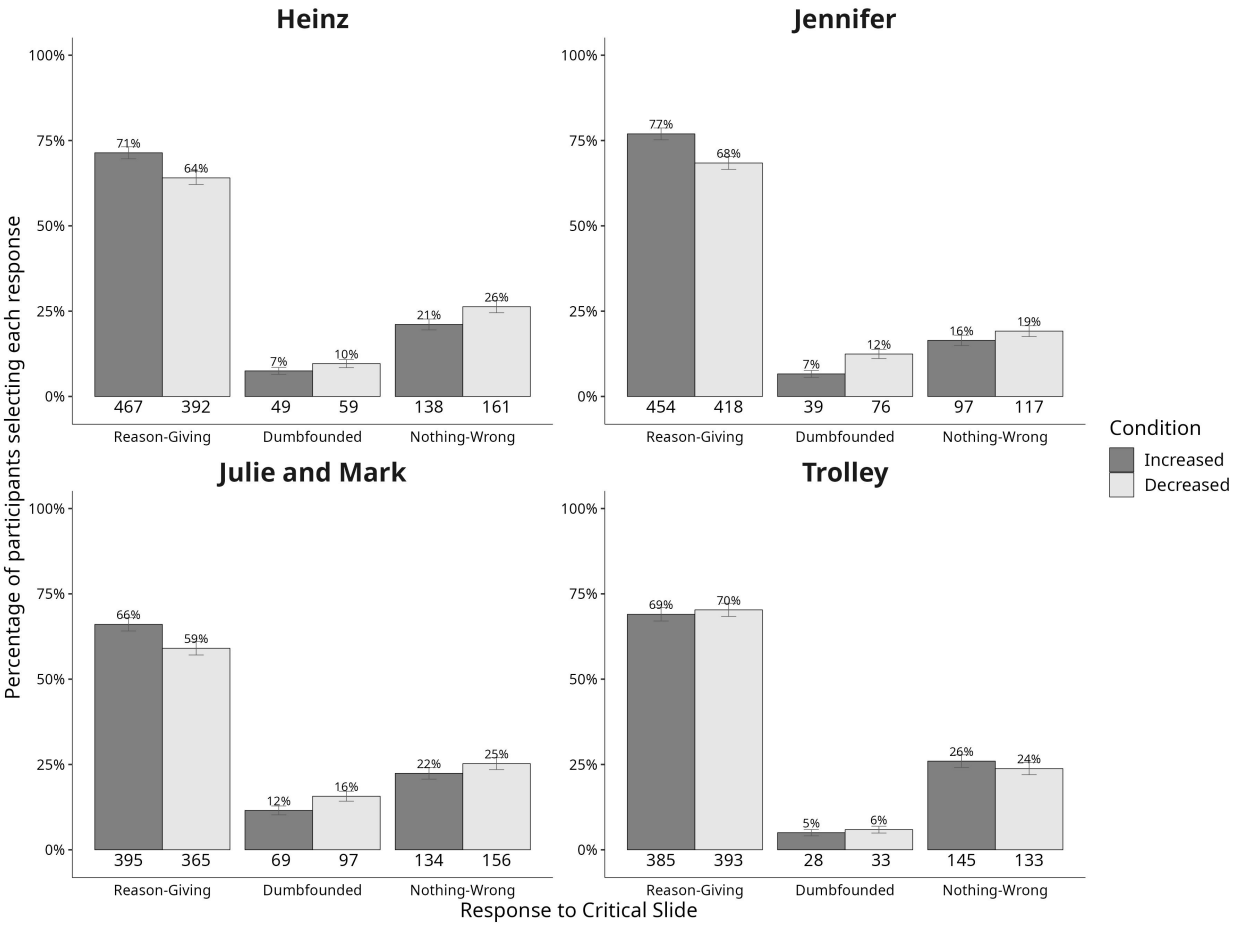


Figure 6

Both distance manipulations and reason-giving for each Scenario