Supplementary Materials: Simulated Data

Cillian McHugh[1], Marek McGann[2], Eric R. Igou[1], and Elaine L. Kinsella [1]

[1]Department of Psychology, University of Limerick

[2]Department of Psychology, Mary Immaculate College

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.

Correspondence concerning this article should be addressed to Cillian McHugh, Email: cillian.mchugh@ul.ie

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 3402 participants (70.88%) rated the behavior of Julie and Mark as wrong initially, and 3247 participants (67.65%) 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), $t(4799)$ = -4.74, $p < .001$, d = 0.07.

Distancing and Judgments Made. There was no difference in initial judgement depending on distance manipulation: $F(2, 4797) = 0.18$, $p = .836$ ${\eta_p}^2 = 0$, ($M_{\text{increased}} = 3.3$, $SD_{\text{increased}} = 1.3$, $M_{\text{decreased}} = 3.3$, $SD_{\text{decreased}} = 1.3$, $M_{\text{control}} = 3.2$, $SD_{\text{control}} = 1.3$). There was no difference in revised judgement depending on distance manipulation: $F(2, 4797) = 0.89$, $p = .412$, ${\eta_p}^2 = 0$, ($M_{\text{increased}} = 3.3$, $SD_{\text{increased}} = 1.4$, $M_{\text{decreased}} = 3.4$, $SD_{\text{decreased}} = 1.4$, $M_{\text{control}} = 3.4$, $SD_{\text{control}} = 1.4$).

Distancing and Reason-Giving/Dumbfounding. There was a significant association between temporal distance condition and response to the critical slide, $\chi^2(4, N = 4800) = 120.243$, $p < .001$, $V = 0.16$, 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)

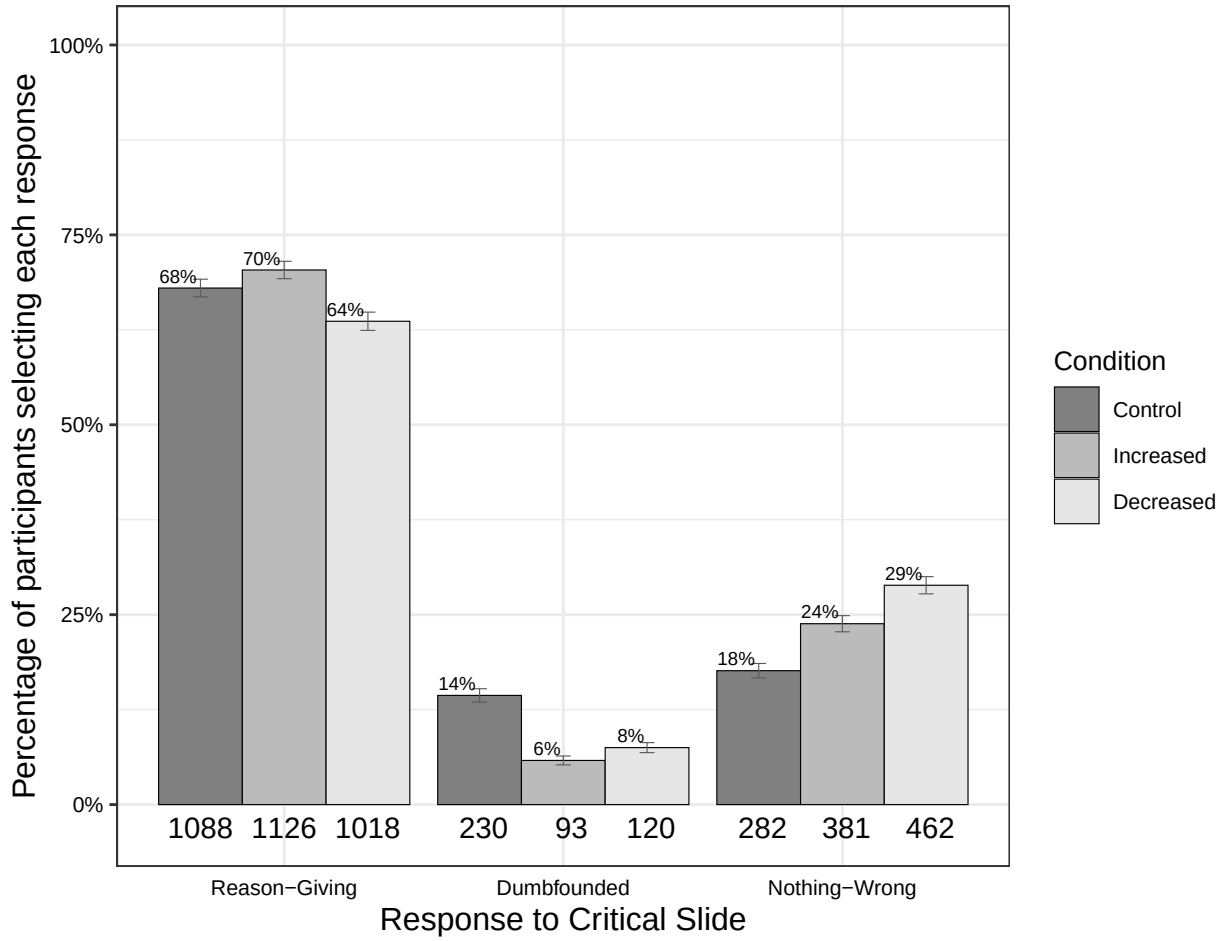


Table 1

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

		Control	Increased	Decreased
Observed count	Reasons	1088	1126	1018
	Dumbfounded	230	93	120
	Nothing Wrong	282	381	462
Expected count	Reasons	1077.33	1077.33	1077.33
	Dumbfounded	147.67	147.67	147.67
	Nothing Wrong	375	375	375
Standardised residuals	Reasons	0.7	3.18*	-3.87**
	Dumbfounded	8.71**	-5.78**	-2.93*
	Nothing Wrong	-6.72**	0.43	6.29**

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

Social Distancing and Dumbfounding

Overview of Judgments. A total of 3402 participants (70.88%) rated the behavior of Julie and Mark as wrong initially, and 3247 participants (67.65%) 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 ($M = 3.4$, $SD = 1.4$), $t(4799) =$ -4.74, $p < .001$, $d = 0.07$.

Distancing and Judgments Made. There was no difference in initial judgement depending on distance manipulation: $t(4797.99) = 1.32$, $p = .186$, $d = 0.04$, ($M_{\text{increased}} = 3.3$, $SD_{\text{increased}} = 1.3$, $M_{\text{decreased}} = 3.2$, $SD_{\text{decreased}} = 1.3$). There was no difference in revised judgement depending on distance manipulation: $t(4797.99) = 0.17$, $p = .865$, $d = 0$, ($M_{\text{increased}} = 3.4$, $SD_{\text{increased}} = 1.4$, $M_{\text{decreased}} = 3.4$, $SD_{\text{decreased}} = 1.4$).

Distancing and Reason-Giving/Dumbfounding. There was a significant association between temporal distance condition and response to the critical slide, $\chi^2(2, N = 4800) = 30.014$, $p < .001$, $V = 0.08$, the observed power was 1. 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 social distance for the increased social distance group (future, N = 2,400), and for the decreased social distance group (today, N = 2,400), (error bars represent standard error of the proportion)

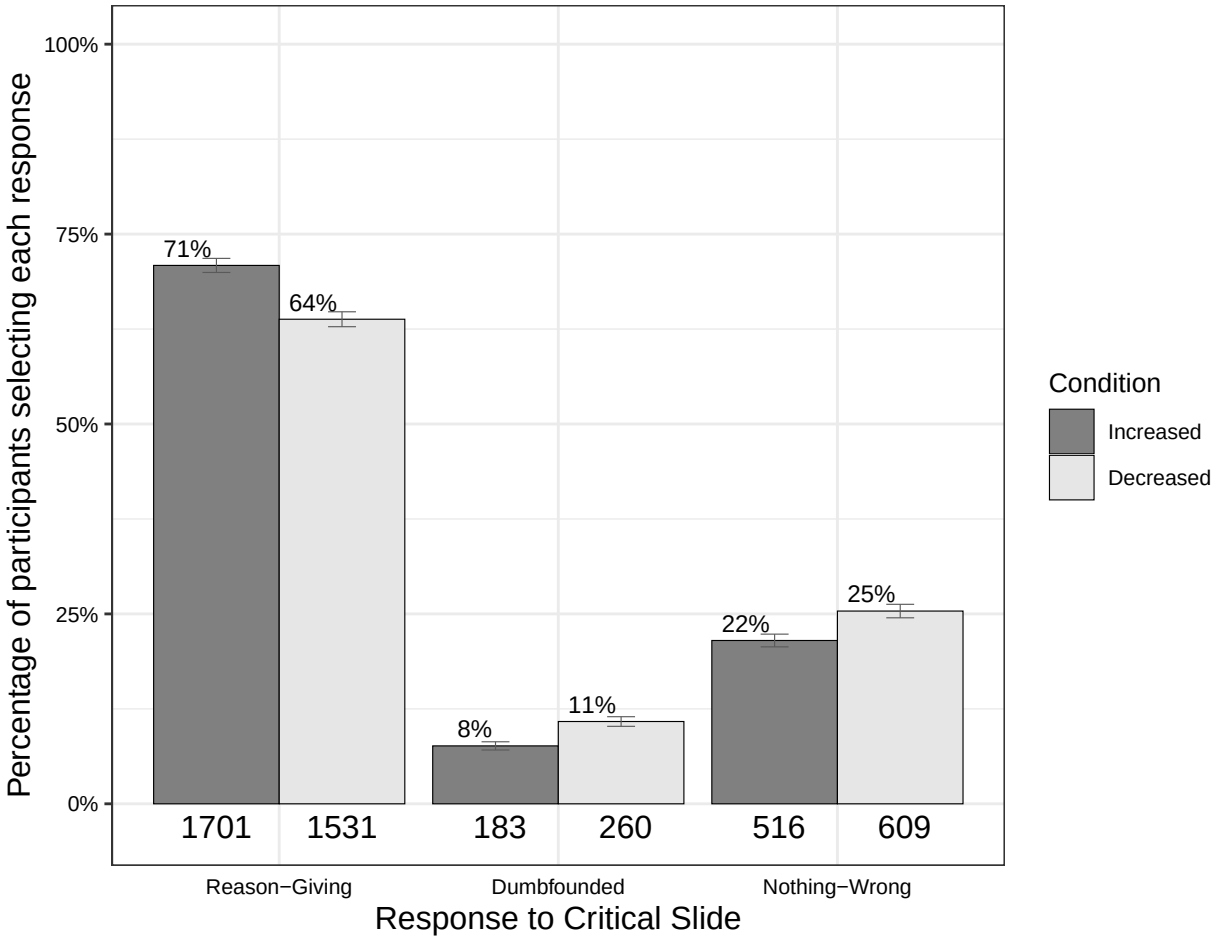


Table 2

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

		Increased	Decreased
Observed count	Reasons	1701	1531
	Dumbfounded	183	260
	Nothing Wrong	516	609
Expected count	Reasons	1616	1616
	Dumbfounded	221.5	221.5
	Nothing Wrong	562.5	562.5
Standardised residuals	Reasons	5.23**	-5.23**
	Dumbfounded	-3.84**	3.84**
	Nothing Wrong	-3.17*	3.17*

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

Distancing and Dumbfounding

Without Scenario

Overall the model significantly predicted responses to the critical slide $\chi^2(10, N = 4800) = 163.77$, $p < .001$, The observed power was 1. The model explained between 1.13% (Cox and Snell R square) and 2.67% (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 = -11.12, $p < .001$, odds ratio = 0.32, 95% CI [0.21, 0.48].

Table 3

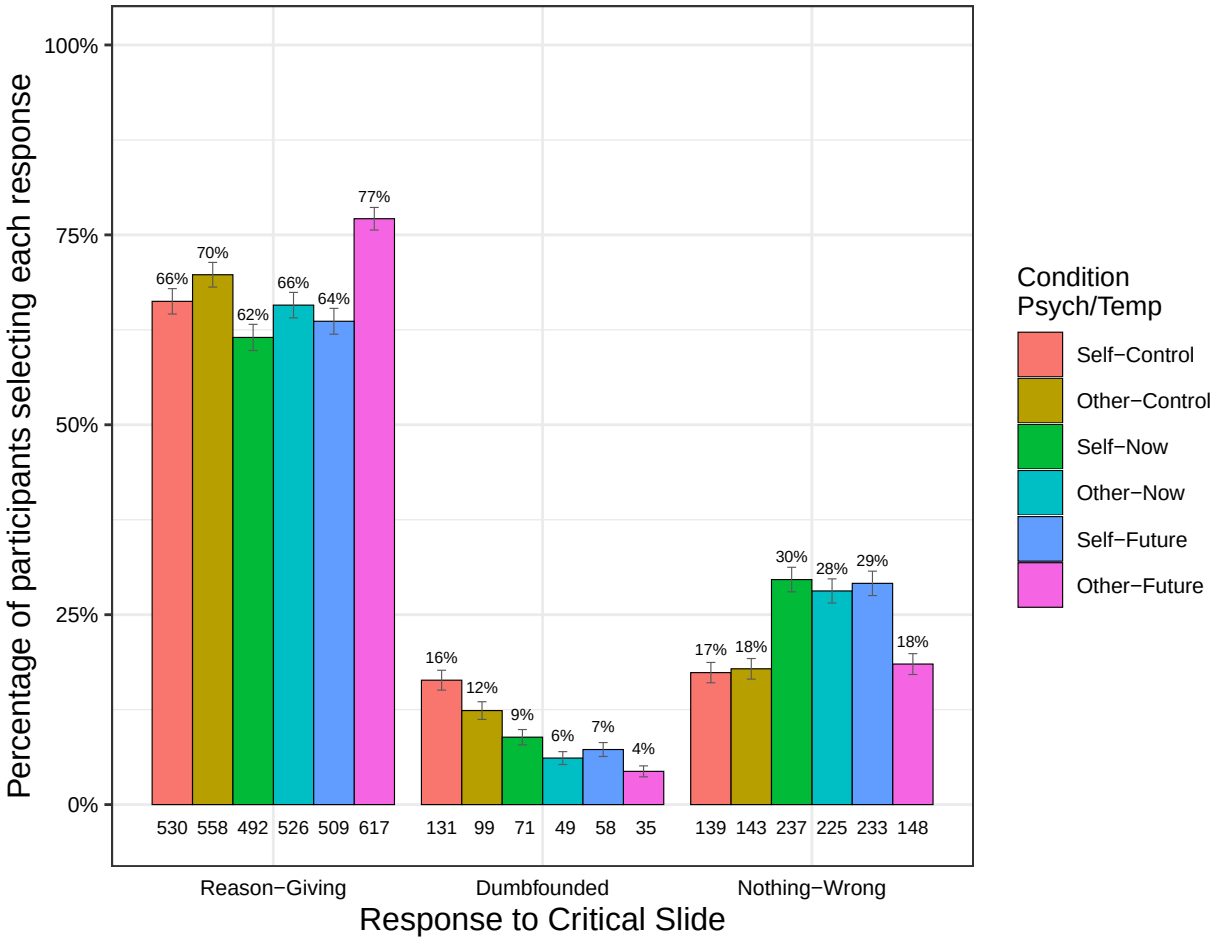
Predictors of each response with reason-giving as the reference response

Response	Term	*b*	*S.E.*	*z*	Wald	*p*	*O.R.*	Lower	Upper
D	(Intercept)	-1.73	0.11	-15.86	-31.71	< .001**	0.18	0.14	0.22
D	Soc-Self	0.33	0.15	2.27	4.53	.023*	1.39	1.05	1.86
D	Temp-Future	-1.14	0.21	-5.56	-11.12	< .001**	0.32	0.21	0.48
D	Temp-Now	-0.64	0.18	-3.48	-6.97	< .001**	0.53	0.37	0.75
D	Soc-Self × Temp-Future	0.37	0.27	1.38	2.75	0.169	1.44	0.86	2.43
D	Soc-Self × Temp-Now	0.11	0.24	0.43	0.87	0.664	1.11	0.69	1.80
NW	(Intercept)	-1.36	0.09	-14.53	-29.05	< .001**	0.26	0.21	0.31
NW	Soc-Self	0.02	0.13	0.17	0.35	0.863	1.02	0.79	1.33
NW	Temp-Future	-0.07	0.13	-0.50	-1.01	0.614	0.94	0.72	1.21
NW	Temp-Now	0.51	0.12	4.17	8.33	< .001**	1.67	1.31	2.12
NW	Soc-Self × Temp-Future	0.62	0.18	3.46	6.91	< .001**	1.86	1.31	2.66
NW	Soc-Self × Temp-Now	0.10	0.17	0.55	1.10	0.583	1.10	0.78	1.55

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 $\chi^2(16, N = 4800) = 231.93$, $p < .001$, The observed power was 1. The model explained between 1.6% (Cox and Snell R square) and 3.77% (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 = -11.16, $p < .001$, odds ratio = 0.32, 95% CI [0.21, 0.47].

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)	-1.89	0.15	-12.97	-25.94	< .001**	0.15	0.11	0.20
D	Soc-Self	0.35	0.15	2.34	4.69	.019*	1.41	1.06	1.89
D	Temp-Future	-1.15	0.21	-5.58	-11.16	< .001**	0.32	0.21	0.47
D	Temp-Now	-0.66	0.19	-3.57	-7.15	< .001**	0.52	0.36	0.74
D	Scenario-Jennifer	0.21	0.15	1.44	2.88	0.149	1.24	0.93	1.65
D	Scenario-Julie and Mark	0.54	0.14	3.83	7.66	< .001**	1.72	1.30	2.28
D	Scenario-Trolley	-0.28	0.17	-1.71	-3.42	0.087	0.75	0.54	1.04
D	Soc-Self × Temp-Future	0.37	0.27	1.39	2.78	0.165	1.45	0.86	2.45
D	Soc-Self × Temp-Now	0.11	0.25	0.43	0.86	0.667	1.11	0.69	1.80
NW	(Intercept)	-1.39	0.11	-12.48	-24.96	< .001**	0.25	0.20	0.31
NW	Soc-Self	0.04	0.13	0.29	0.59	0.77	1.04	0.80	1.35
NW	Temp-Future	-0.07	0.13	-0.57	-1.14	0.569	0.93	0.72	1.20
NW	Temp-Now	0.51	0.12	4.17	8.34	< .001**	1.67	1.31	2.13
NW	Scenario-Jennifer	-0.32	0.10	-3.09	-6.19	.002*	0.72	0.59	0.89
NW	Scenario-Julie and Mark	0.21	0.10	2.20	4.39	.028*	1.24	1.02	1.50
NW	Scenario-Trolley	0.16	0.10	1.63	3.26	0.104	1.17	0.97	1.42
NW	Soc-Self × Temp-Future	0.62	0.18	3.45	6.90	< .001**	1.87	1.31	2.66
NW	Soc-Self × Temp-Now	0.09	0.18	0.53	1.06	0.596	1.10	0.78	1.55

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 890 participants (71.2%) rated the behavior of Julie and Mark as wrong initially, and 811 participants (64.88%) rated the behavior as wrong at the end of the task. There was a significant difference between initial ratings (M = 3.2, SD = 1.3) and revised ratings (M = 3.5, SD = 1.4), $t(1249)$ = -3.78, $p < .001$, d = 0.11.

Distancing and Judgments Made. There was no difference in initial judgement depending on distance manipulation: $F(2, 1247) = 0.18$, $p = .831$ ${\eta_p}^2 = 0$, ($M_{\text{increased}} = 3.3$, $SD_{\text{increased}} = 1.3$, $M_{\text{decreased}} = 3.2$, $SD_{\text{decreased}} = 1.3$, $M_{\text{control}} = 3.2$, $SD_{\text{control}} = 1.3$). There was no difference in revised judgement depending on distance manipulation: $F(2, 1247) = 0.25$, $p = .777$, ${\eta_p}^2 = 0$, ($M_{\text{increased}} = 3.5$, $SD_{\text{increased}} = 1.4$, $M_{\text{decreased}} = 3.4$, $SD_{\text{decreased}} = 1.4$, $M_{\text{control}} = 3.5$, $SD_{\text{control}} = 1.5$).

Distancing and Reason-Giving/Dumbfounding. There was a significant association between temporal distance condition and response to the critical slide, $\chi^2(4, N = 1250) = 31.674$, $p < .001$, $V = 0.16$, the observed power was 1. The responses to the critical slide for the increased distance group (N = 415) the decreased distance group (N = 433), and the control group (N = 402) 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	258	257	259
	Dumbfounded	72	38	42
	Nothing Wrong	72	120	132
Expected count	Reasons	248.92	256.97	268.11
	Dumbfounded	48.88	50.46	52.65
	Nothing Wrong	104.2	107.57	112.23
Standardised residuals	Reasons	1.13	0	-1.12
	Dumbfounded	4.28**	-2.29*	-1.94
	Nothing Wrong	-4.45**	1.7	2.68*

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

Social Distancing and Dumbfounding.

Overview of Judgments. A total of 890 participants (71.2%) rated the behavior of Julie and Mark as wrong initially, and 811 participants (64.88%) rated the behavior as wrong at the end of the task. There was a significant difference between initial ratings ($M = 3.2$, $SD = 1.3$) and revised ratings ($M = 3.5$, $SD = 1.4$), $t(1249) =$ -3.78, $p < .001$, $d = 0.11$.

Distancing and Judgments Made. There was no difference in initial judgement depending on distance manipulation: $t(1226.4) = 0.41$, $p = .679$, $d = 0.02$, ($M_{\text{increased}} = 3.3$, $SD_{\text{increased}} = 1.3$, $M_{\text{decreased}} = 3.2$, $SD_{\text{decreased}} = 1.4$). There was no difference in revised judgement depending on distance manipulation: $t(1236.77) =$ -1.41, $p = .160$, $d = 0.08$, ($M_{\text{increased}} = 3.4$, $SD_{\text{increased}} = 1.4$, $M_{\text{decreased}} = 3.5$, $SD_{\text{decreased}} = 1.4$).

Distancing and Reason-Giving/Dumbfounding. There was a significant association between temporal distance condition and response to the critical slide, $\chi^2(2, N = 1250) = 8.189$, $p = .017$, $V = 0.08$, the observed power was 0.67. The responses to the critical slide for the increased distance group ($N = 659$) and the decreased distance group ($N = 591$) are displayed in Figure 5.

Table 6

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

		Increased	Decreased
Observed count	Reasons	424	350
	Dumbfounded	64	88
	Nothing Wrong	171	153
Expected count	Reasons	408.05	365.95
	Dumbfounded	80.13	71.87
	Nothing Wrong	170.81	153.19
Standardised residuals	Reasons	1.86	-1.86
	Dumbfounded	-2.8*	2.8*
	Nothing Wrong	0.02	-0.02

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 social distance on responses to the critical slide. Overall the model significantly predicted responses to the critical slide $\chi^2(10, N = 1250) = 46.12$, $p < .001$, The observed power was 1. The model explained between 1.22% (Cox and Snell R square) and 2.7% (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 = -4.82, $p = .016$, odds ratio = 0.45, 95% CI [0.23, 0.86].

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)	-1.49	0.20	-7.51	-15.03	< .001**	0.22	0.15	0.33
D	Soc-Self	0.42	0.27	1.56	3.12	0.119	1.52	0.90	2.58
D	Temp-Future	-0.81	0.34	-2.41	-4.82	.016*	0.45	0.23	0.86
D	Temp-Now	-0.53	0.32	-1.65	-3.31	0.098	0.59	0.31	1.10
D	Soc-Self × Temp-Future	0.35	0.45	0.78	1.55	0.437	1.41	0.59	3.38
D	Soc-Self × Temp-Now	-0.03	0.43	-0.07	-0.15	0.942	0.97	0.42	2.25
NW	(Intercept)	-1.17	0.17	-6.68	-13.35	< .001**	0.31	0.22	0.44
NW	Soc-Self	-0.25	0.27	-0.94	-1.88	0.348	0.78	0.46	1.32
NW	Temp-Future	0.16	0.24	0.69	1.38	0.489	1.18	0.74	1.87
NW	Temp-Now	0.54	0.23	2.40	4.79	.017*	1.72	1.10	2.69
NW	Soc-Self × Temp-Future	0.76	0.35	2.17	4.33	.030*	2.14	1.07	4.25
NW	Soc-Self × Temp-Now	0.14	0.35	0.41	0.82	0.682	1.15	0.59	2.27

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 849 participants (71.83%) rated the behavior of Julie and Mark as wrong initially, and 803 participants (67.94%) rated the behavior as wrong at the end of the task. There was a significant difference between initial ratings (M = 3.2, SD = 1.3) and revised ratings (M = 3.4, SD = 1.4), $t(1181)$ = -2.68, p = .007, d = 0.08.

Distancing and Judgments Made. There was no difference in initial judgement depending on distance manipulation: $F(2, 1179) = 0.45$, p = .636 ${\eta_p}^2$ = 0.001, ($M_{\text{increased}}$ = 3.2, $SD_{\text{increased}}$ = 1.4, $M_{\text{decreased}}$ = 3.2, $SD_{\text{decreased}}$ = 1.3, M_{control} = 3.3, SD_{control} = 1.3). There was no difference in revised judgement depending on distance manipulation: $F(2, 1179) = 0.02$, p = .982, ${\eta_p}^2 = 0$, ($M_{\text{increased}}$ = 3.4, $SD_{\text{increased}}$ = 1.4, $M_{\text{decreased}}$ = 3.4, $SD_{\text{decreased}}$ = 1.3, 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, $\chi^2(4, N = 1182) = 36.231$, $p < .001$, $V = 0.18$, the observed power was 1. The responses to the critical slide for the increased distance group (N = 371) the decreased distance group (N = 398), and the control group (N = 413) 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	289	282	275
	Dumbfounded	70	23	33
	Nothing Wrong	54	66	90
Expected count	Reasons	295.6	265.54	284.86
	Dumbfounded	44.03	39.55	42.43
	Nothing Wrong	73.38	65.91	70.71
Standardised residuals	Reasons	-0.89	2.29*	-1.35
	Dumbfounded	5.13**	-3.36**	-1.88
	Nothing Wrong	-3.09*	0.01	3.11*

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

Social Distancing and Dumbfounding.

Overview of Judgments. A total of 849 participants (71.83%) rated the behavior of Julie and Mark as wrong initially, and 803 participants (67.94%) rated the behavior as wrong at the end of the task. There was a significant difference between initial ratings ($M = 3.2$, $SD = 1.3$) and revised ratings ($M = 3.4$, $SD = 1.4$), $t(1181) =$ -2.68, $p = .007$, $d = 0.08$.

Distancing and Judgments Made. There was no difference in initial judgement depending on distance manipulation: $t(1146.64) = 0.09$, $p = .930$, $d = 0.01$, ($M_{\text{increased}} = 3.2$, $SD_{\text{increased}} = 1.3$, $M_{\text{decreased}} = 3.2$, $SD_{\text{decreased}} = 1.3$). There was no difference in revised judgement depending on distance manipulation: $t(1161.69) = 1.26$, $p = .208$, $d = 0.07$, ($M_{\text{increased}} = 3.4$, $SD_{\text{increased}} = 1.4$, $M_{\text{decreased}} = 3.3$, $SD_{\text{decreased}} =$ 1.4).

Distancing and Reason-Giving/Dumbfounding. There was a significant association between temporal distance condition and response to the critical slide, $\chi^2(2, N = 1182) = 10.383$, $p = .006$, $V = 0.09$, the observed power was 0.78. The responses to the critical slide for the increased distance group ($N = 549$) and the decreased distance group ($N = 633$) are displayed in Figure 5.

Table 9

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

		Increased	Decreased
Observed count	Reasons	414	432
	Dumbfounded	43	83
	Nothing Wrong	92	118
Expected count	Reasons	392.94	453.06
	Dumbfounded	58.52	67.48
	Nothing Wrong	97.54	112.46
Standardised residuals	Reasons	2.72*	-2.72*
	Dumbfounded	-2.93*	2.93*
	Nothing Wrong	-0.84	0.84

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 social distance on responses to the critical slide. Overall the model significantly predicted responses to the critical slide $\chi^2(10, N = 1182) = 50.16$, $p < .001$, The observed power was 1. The model explained between 1.4% (Cox and Snell R square) and 3.45% (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 = -6.03, $p = .003$, odds ratio = 0.26, 95% CI [0.11, 0.63].

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)	-1.68	0.21	-7.85	-15.69	< .001**	0.19	0.12	0.28
D	Soc-Self	0.45	0.27	1.64	3.28	0.1	1.57	0.92	2.68
D	Temp-Future	-1.33	0.44	-3.02	-6.03	.003*	0.26	0.11	0.63
D	Temp-Now	-0.91	0.39	-2.33	-4.66	.020*	0.40	0.19	0.87
D	Soc-Self × Temp-Future	0.39	0.54	0.72	1.44	0.471	1.48	0.51	4.28
D	Soc-Self × Temp-Now	0.32	0.48	0.66	1.32	0.511	1.37	0.53	3.54
NW	(Intercept)	-1.84	0.23	-8.03	-16.07	< .001**	0.16	0.10	0.25
NW	Soc-Self	0.30	0.30	0.99	1.98	0.321	1.35	0.75	2.43
NW	Temp-Future	0.07	0.32	0.21	0.41	0.837	1.07	0.57	1.99
NW	Temp-Now	0.78	0.29	2.73	5.46	.006*	2.19	1.25	3.83
NW	Soc-Self × Temp-Future	0.28	0.41	0.67	1.33	0.505	1.32	0.59	2.96
NW	Soc-Self × Temp-Now	-0.41	0.39	-1.06	-2.11	0.291	0.66	0.31	1.42

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 824 participants (69.07%) rated the behavior of Julie and Mark as wrong initially, and 839 participants (70.33%) 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), $t(1192)$ = -1.29, p = .196, d = 0.04.

Distancing and Judgments Made. There was no difference in initial judgement depending on distance manipulation: $F(2, 1190) = 0.43$, p = .648 ${\eta_p}^2$ = 0.001, ($M_{\text{increased}}$ = 3.3, $SD_{\text{increased}}$ = 1.3, $M_{\text{decreased}}$ = 3.3, $SD_{\text{decreased}}$ = 1.3, M_{control} = 3.3, SD_{control} = 1.4). There was no difference in revised judgement depending on distance manipulation: $F(2, 1190) = 2.52$, p = .081, ${\eta_p}^2$ = 0.004, ($M_{\text{increased}}$ = 3.3, $SD_{\text{increased}}$ = 1.3, $M_{\text{decreased}}$ = 3.5, $SD_{\text{decreased}}$ = 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, $\chi^2(4, N = 1193) = 23.917$, $p < .001$, V = 0.14, the observed power was 0.99. The responses to the critical slide for the increased distance group (N = 416) the decreased distance group (N = 371), and the control group (N = 406) 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	280	291	233
	Dumbfounded	39	15	18
	Nothing Wrong	87	110	120
Expected count	Reasons	273.62	280.36	250.03
	Dumbfounded	24.5	25.11	22.39
	Nothing Wrong	107.88	110.54	98.58
Standardised residuals	Reasons	0.83	1.38	-2.27*
	Dumbfounded	3.72**	-2.58*	-1.15
	Nothing Wrong	-2.89*	-0.07	3.03*

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

Social Distancing and Dumbfounding.

Overview of Judgments. A total of 824 participants (69.07%) rated the behavior of Julie and Mark as wrong initially, and 839 participants (70.33%) 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 ($M = 3.4$, $SD = 1.4$), $t(1192) =$ -1.29, $p = .196$, $d = 0.04$.

Distancing and Judgments Made. There was no difference in initial judgement depending on distance manipulation: $t(1185.88) = 0.88$, $p = .378$, $d = 0.05$, ($M_{\text{increased}} = 3.3$, $SD_{\text{increased}} = 1.3$, $M_{\text{decreased}} = 3.3$, $SD_{\text{decreased}} = 1.3$). There was no difference in revised judgement depending on distance manipulation: $t(1178.16) = 1.07$, $p = .285$, $d = 0.06$, ($M_{\text{increased}} = 3.4$, $SD_{\text{increased}} = 1.4$, $M_{\text{decreased}} = 3.3$, $SD_{\text{decreased}} =$ 1.3).

Distancing and Reason-Giving/Dumbfounding. There was a significant association between temporal distance condition and response to the critical slide, $\chi^2(2, N = 1193) = 12.077$, $p = .002$, $V = 0.1$, the observed power was 0.84. The responses to the critical slide for the increased distance group ($N = 580$) and the decreased distance group ($N = 613$) are displayed in Figure 5.

Table 12

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

		Increased	Decreased
Observed count	Reasons	414	432
	Dumbfounded	43	83
	Nothing Wrong	92	118
Expected count	Reasons	392.94	453.06
	Dumbfounded	58.52	67.48
	Nothing Wrong	97.54	112.46
Standardised residuals	Reasons	2.72*	-2.72*
	Dumbfounded	-2.93*	2.93*
	Nothing Wrong	-0.84	0.84

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 social distance on responses to the critical slide. Overall the model significantly predicted responses to the critical slide $\chi^2(10, N = 1193) = 45.62$, $p < .001$, The observed power was 1. The model explained between 1.27% (Cox and Snell R square) and 3.1% (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 = -4.53, $p = .024$, odds ratio = 0.35, 95% CI [0.14, 0.87].

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)	-2.07	0.26	-8.05	-16.10	< .001**	0.13	0.08	0.21
D	Soc-Self	0.19	0.34	0.54	1.08	0.588	1.21	0.61	2.37
D	Temp-Future	-1.05	0.46	-2.26	-4.53	.024*	0.35	0.14	0.87
D	Temp-Now	-0.96	0.49	-1.97	-3.93	.049*	0.38	0.15	1.00
D	Soc-Self × Temp-Future	0.13	0.63	0.21	0.42	0.833	1.14	0.33	3.95
D	Soc-Self × Temp-Now	0.65	0.62	1.05	2.10	0.293	1.92	0.57	6.49
NW	(Intercept)	-1.14	0.18	-6.53	-13.07	< .001**	0.32	0.23	0.45
NW	Soc-Self	-0.05	0.25	-0.20	-0.39	0.844	0.95	0.59	1.54
NW	Temp-Future	-0.37	0.26	-1.44	-2.89	0.149	0.69	0.42	1.14
NW	Temp-Now	0.29	0.24	1.19	2.39	0.233	1.33	0.83	2.13
NW	Soc-Self × Temp-Future	1.00	0.34	2.93	5.85	.003*	2.71	1.39	5.28
NW	Soc-Self × Temp-Now	0.43	0.33	1.29	2.57	0.199	1.54	0.80	2.95

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 839 participants (71.4%) rated the behavior of Julie and Mark as wrong initially, and 794 participants (67.57%) 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), $t(1174)$ = -1.68, p = .093, d = 0.05.

Distancing and Judgments Made. There was no difference in initial judgement depending on distance manipulation: $F(2, 1172) = 1.11$, p = .330 ${\eta_p}^2$ = 0.002, ($M_{\text{increased}}$ = 3.2, $SD_{\text{increased}}$ = 1.3, $M_{\text{decreased}}$ = 3.3, $SD_{\text{decreased}}$ = 1.4, M_{control} = 3.2, SD_{control} = 1.3). There was no difference in revised judgement depending on distance manipulation: $F(2, 1172) = 0.49$, p = .612, ${\eta_p}^2 = 0.001$, ($M_{\text{increased}}$ = 3.3, $SD_{\text{increased}}$ = 1.4, $M_{\text{decreased}}$ = 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, $\chi^2(4, N = 1175) = 35.929$, $p < .001$, $V = 0.17$, the observed power was 1. The responses to the critical slide for the increased distance group (N = 398) the decreased distance group (N = 398), and the control group (N = 379) 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	280	291	233
	Dumbfounded	39	15	18
	Nothing Wrong	87	110	120
Expected count	Reasons	273.62	280.36	250.03
	Dumbfounded	24.5	25.11	22.39
	Nothing Wrong	107.88	110.54	98.58
Standardised residuals	Reasons	0.83	1.38	-2.27*
	Dumbfounded	3.72**	-2.58*	-1.15
	Nothing Wrong	-2.89*	-0.07	3.03*

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

Social Distancing and Dumbfounding.

Overview of Judgments. A total of 839 participants (71.4%) rated the behavior of Julie and Mark as wrong initially, and 794 participants (67.57%) 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), $t(1174)$ = -1.68, p = .093, d = 0.05.

Distancing and Judgments Made. There was no difference in initial judgement depending on distance manipulation: $t(1162.66)$ = 1.24, p = .216, d = 0.07, ($M_{\text{increased}}$ = 3.3, $SD_{\text{increased}}$ = 1.3, $M_{\text{decreased}}$ = 3.2, $SD_{\text{decreased}}$ = 1.3). There was no difference in revised judgement depending on distance manipulation: $t(1155.75)$ = -0.62, p = .538, d = 0.04, ($M_{\text{increased}}$ = 3.3, $SD_{\text{increased}}$ = 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, $\chi^2(2, N = 1175) = 9.189$, p = .010, V = 0.09, the observed power was 0.72. The responses to the critical slide for the increased distance group (N = 612) and the decreased distance group (N = 563) are displayed in Figure 5.

Table 15

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

		Increased	Decreased
Observed count	Reasons	414	432
	Dumbfounded	43	83
	Nothing Wrong	92	118
Expected count	Reasons	392.94	453.06
	Dumbfounded	58.52	67.48
	Nothing Wrong	97.54	112.46
Standardised residuals	Reasons	2.72*	-2.72*
	Dumbfounded	-2.93*	2.93*
	Nothing Wrong	-0.84	0.84

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 social distance on responses to the critical slide. Overall the model significantly predicted responses to the critical slide $\chi^2(10, N = 1175) = 47.35$, $p < .001$, The observed power was 1. The model explained between 1.33% (Cox and Snell R square) and 3.24% (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 = -6.64, $p < .001$, odds ratio = 0.21, 95% CI [0.08, 0.53].

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)	-1.76	0.22	-8.15	-16.31	< .001**	0.17	0.11	0.26
D	Soc-Self	0.20	0.31	0.63	1.27	0.526	1.22	0.66	2.25
D	Temp-Future	-1.56	0.47	-3.32	-6.64	< .001**	0.21	0.08	0.53
D	Temp-Now	-0.41	0.35	-1.18	-2.36	0.239	0.66	0.34	1.31
D	Soc-Self × Temp-Future	0.65	0.61	1.08	2.15	0.282	1.92	0.58	6.31
D	Soc-Self × Temp-Now	-0.32	0.51	-0.62	-1.24	0.536	0.73	0.27	1.99
NW	(Intercept)	-1.43	0.19	-7.59	-15.18	< .001**	0.24	0.17	0.35
NW	Soc-Self	0.21	0.27	0.77	1.55	0.439	1.23	0.72	2.10
NW	Temp-Future	-0.16	0.27	-0.59	-1.18	0.554	0.85	0.51	1.44
NW	Temp-Now	0.52	0.25	2.07	4.15	.038*	1.67	1.03	2.73
NW	Soc-Self × Temp-Future	0.44	0.37	1.19	2.39	0.233	1.55	0.75	3.20
NW	Soc-Self × Temp-Now	0.13	0.35	0.37	0.73	0.715	1.14	0.57	2.26

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

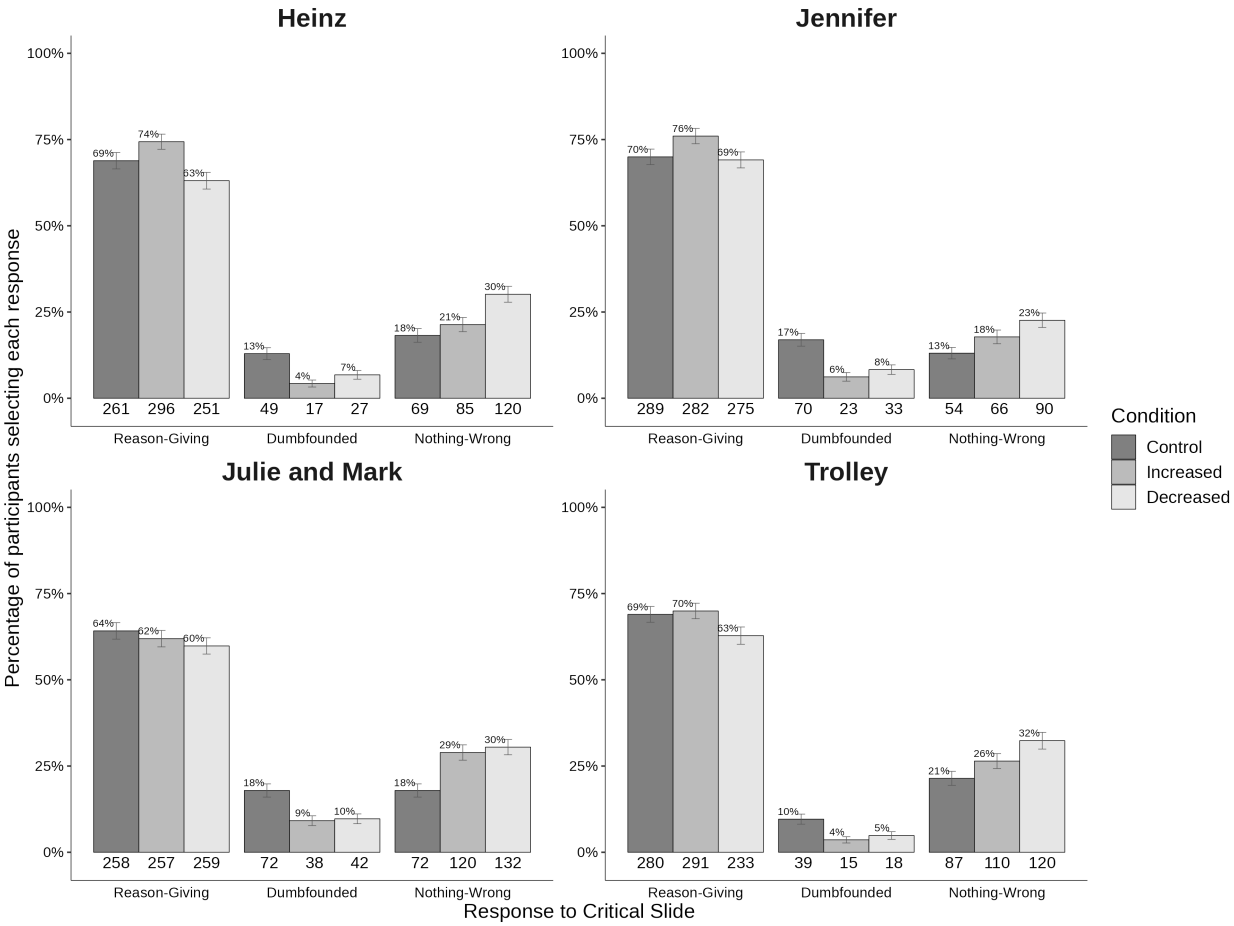


Figure 5

Social distance and reason-giving for each Scenario

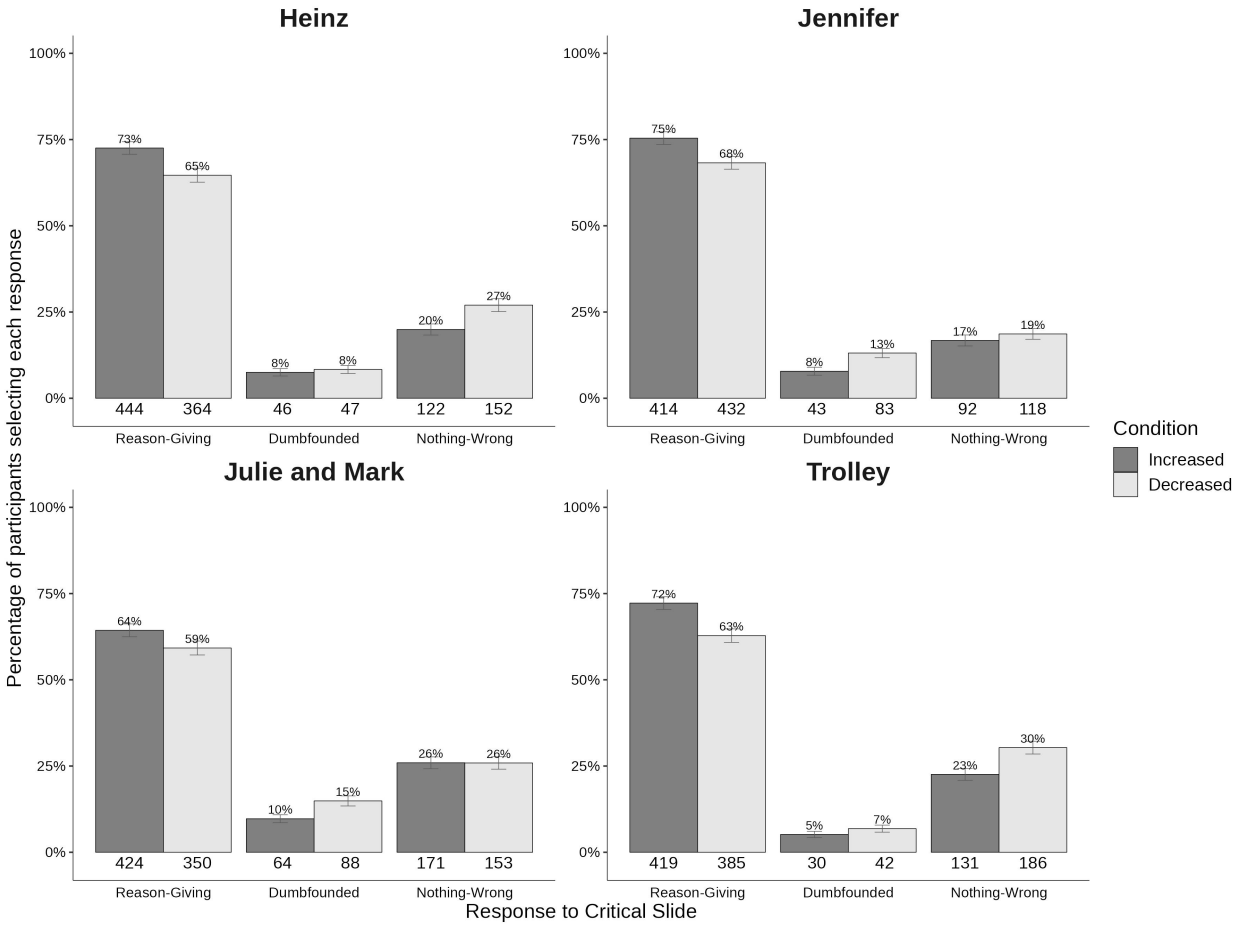


Figure 6

Both distance manipulations and reason-giving for each Scenario