Supplemental Materials – Univariate Analyses and Analyses of Alternative Causes

In the main text we reported the effects of the initial cause and correction manipulations on participants' endorsements of and reliance on the initial cause reported in the news report. In this supplemental document we focus on additional effects that may be of interest. We have included here the effects for all three experiments of the experimental manipulations on the measures of reliance individually (i.e., the univariate analyses). For Experiments 1 and 2 we also include the effects of these manipulations on participants' endorsements of and reliance on the *alternative* causes.

Experiment 1

Reliance on the Atypical Alternative Cause

As reported in the main text, the different alternative explanations did not lead to different reliance on gas cylinders as a cause. However, the different alternative explanations did lead to different reliance on the typical and atypical alternatives as causes. As ratings of likelihood that a cannon was involved and direct references to the cannon were highly correlated, $r = 0.72$, $p < .001$, the measures were analyzed together using a one-way (Story Version: uncorrected, correction only, correction + atypical alternative, and correction + typical alternative) MANOVA (univariate results are reported in Table S1). The analysis revealed a significant main effect of Story Version on reliance on the cannon as a cause, $V = 0.73$, $F(6, 412) = 39.17$, $p < .001$, $\eta_p^2 = 0.36$. As shown in Table S2, consistent with story manipulation, correction + atypical alternative participants relied on a detonated cannon as a cause more than did the uncorrected, $F(2, 205) = 170.53$, $p < .001$, $\eta_p^2 = 0.63$, correction only, $F(2, 205) = 179.41$, $p < .001$, $\eta_p^2 = 0.64$, and correction + typical alternative participants, $F(2, 205) = 181.06$, $p < .001$, $\eta_p^2 = 0.64$. The uncorrected, correction only, and correction + typical alternative participants did not significantly differ in their reliance on a detonated cannon as a cause, *p*'s > .55, η_p^2's < 0.01.

Reliance on the Typical Alternative Cause

As ratings of likelihood that faulty wiring was involved in the fire and direct references to faulty wiring were also correlated, $r = 0.53$, $p < .001$, these measures were also analyzed together using a one-way (Story Version) MANOVA. The analysis revealed a significant main effect on ratings of likelihood that faulty wiring was involved in the fire, $V = 0.77$, $F(6, 412) = 43.18$, $p < .001$, $\eta_p^2 = 0.39$. As shown in Table S2, consistent with the story manipulation, correction + typical alternative participants relied on faulty wiring as a cause significantly more than did the uncorrected, $F(2, 205) = 169.07$, $p < .001$, $\eta_p^2 = 0.62$, correction only, $F(2, 205) = 158.19$, $p < .001$, $\eta_p^2 = 0.61$, and correction + atypical alternative participants, $F(2, 205) = 182.28$, $p < .001$, $\eta_p^2 = 0.64$. Furthermore, correction + atypical alternative participants relied on faulty wiring as a cause significantly less than did the correction only participants, $F(2, 205) = 6.56$, $p = .002$, $\eta_p^2 = 0.06$, but not the uncorrected participants, $F(2, 205) = 3.07$, $p = .05$, $p_{Adj} = .10$, $\eta_p^2 = 0.03$.

While this latter finding may suggest that learning about a typical alternative cause can decrease reliance on other potential causes, after correcting for multiple comparisons using the Holm-Bonferroni method, no differences for Story Version were obtained with respect to likelihood ratings of the other novel causes—falling satellite debris, $F(3, 206) = 0.41$, $p = .75$, arson, $F(3, 206) = 1.73$, $p = 0.16$, or terrorist activity, $F(3, 206) = 2.78$, $p = .04$, $p_{Adj} = 0.17$.

Endorsement of the Alternative Causes

The different versions of the story also led to different rates of endorsement of the alternative causes (percentages reported in Table 3 in the main text). Logistic regressions revealed that correction + typical alternative participants endorsed the faulty wiring as a cause significantly more often than did the uncorrected, $\beta = 4.70$, Wald's $\chi^2(1) = 34.38$, $p < .001$, OR = 110.00 [22.56, 529.42], correction only, $\beta = 3.70$, Wald's $\chi^2(1) = 39.76$, $p < .001$, OR = 40.48 [12.81, 127.89], and correction + atypical alternative participants, $\beta = 5.43$, Wald's $\chi^2(1) = 25.85$, $p < .001$, OR = 228.80 [28.17, 1858.11]. The uncorrected, no alternative, and atypical alternative participants did not differ in their reliance on faulty wiring as a cause, p's > .10.

Due to the 0% endorsement rates of a detonated cannon as a cause in the uncorrected, no alternative, and typical alternative groups, this variable could not be analyzed using a logistic regression. However, the high rates of endorsement of the detonated cannon in the atypical alternative group serves as an indication of the influence of providing an atypical alternative on rates of endorsement of the detonated cannon as a cause.

Experiment 2

Reliance on the Initial Cause

As shown in Table S1, the pattern of results was similar for the direct references and the likelihood ratings (see Table 4 in the main text for descriptive statistics). The overall multivariate results closely resembled the univariate analyses for both dependent variables individually. Most importantly for the conclusions of Experiment 2, the effect sizes for the Initial Cause x Story Version interaction were similar for both the direct references, $F(3, 400) = 3.28$, $p = 0.02$, η_p^2 = 0.024, and the likelihood ratings, $F(3, 400) = 2.35$, $p = 0.08$, η_p^2 = 0.017, even though this interaction was only statistically significant for the direct references.

Reliance on the Atypical Alternative Cause

As in Experiment 1, the different alternative explanations lead to different reliance on the typical and atypical alternatives. Because ratings of likelihood that a cannon was involved and direct references to the cannon were highly correlated, $r = 0.67$, $p < .001$, we analyzed reliance on the cannon using a 2 (Initial Cause: typical cause vs. atypical cause) x 4 (Story Version: uncorrected, correction only, correction + atypical alternative, and correction + typical alternative) MANOVA. The analysis revealed a main effect of Story Version, $V = 0.76$, $F(6, 800) = 80.99$, $p < .001$, $\eta_p^2 = 0.38$. As shown in Table S3, planned comparisons revealed that, consistent with the story manipulation, correction + atypical alternative participants relied on a detonated cannon as a cause more than did the uncorrected, $F(2, 399) = 380.25$, $p < .001$, $\eta_p^2 = 0.66$, correction only, $F(2, 399) = 401.96$, $p < .001$, $\eta_p^2 = 0.67$, and correction + typical alternative participants, $F(2, 399) = 395.04$, $p < .001$, $\eta_p^2 = 0.66$. The uncorrected, no alternative, and correction + typical alternative participants did not significantly differ in their reliance on a detonated cannon as a cause, p's > .13, η_p^2's ≤ 0.01. Neither the main effect of Initial Cause, $V < 0.01$, $F(2, 399) = 0.38$, $p = .69$, $\eta_p^2 < 0.01$, nor the Initial Cause x Story Version interaction, $V = 0.01$, $F(6, 800) = 0.44$, $p = .85$, $\eta_p^2 < 0.01$, were significant.

Reliance on the Typical Alternative Cause

As ratings of likelihood that faulty wiring was involved in the fire and direct references to faulty wiring were also correlated, $r = 0.55$, $p < .001$, these measures were also analyzed together using a 2 (Initial Cause) x 4 (Story Version) MANOVA. The analysis revealed a main effect of Story Version, $V = 0.67$, $F(6, 800) = 67.25$, $p < .001$, $\eta_p^2 = 0.34$, that was qualified by an Initial Cause x Story Version interaction, $V = 0.03$, $F(6, 800) = 2.23$, $p = .04$, $\eta_p^2 = 0.02$. There was no significant main effect of Initial Cause, $V = 0.01$, $F(2, 399) = 1.82$, $p = .16$, $\eta_p^2 = 0.01$.

Decomposing this interaction revealed significant simple main effects of Story Version for both typical cause participants, $V = 0.50$, $F(6, 800) = 44.83$, $p < .001$, $\eta_p^2 = 0.25$, and atypical cause participants, $V = 0.52$, $F(6, 800) = 46.94$, $p < .001$, $\eta_p^2 = 0.26$. As shown in Table S3, for typical cause participants, planned comparisons revealed that, as expected, correction + typical alternative participants relied on faulty wiring more than did uncorrected, $F(2, 399) = 129.32$, $p < .001$, $\eta_p^2 = 0.39$, correction only, $F(2, 399) = 112.72$, $p < .001$, $\eta_p^2 = 0.36$, and correction + atypical alternative participants, $F(2, 399) = 141.32$, $p < .001$, $\eta_p^2 = 0.42$. No other comparisons were significant, all p's > .08, all η_p^2's ≤ 0.01.

For atypical cause participants, planned comparisons revealed the same expected pattern as correction + typical alternative participants relied on faulty wiring more than did uncorrected, $F(2, 399) = 121.98$, $p < .001$, $\eta_p^2 = 0.38$, correction only, $F(2, 399) = 115.92$, $p < .001$, $\eta_p^2 = 0.37$, and correction + atypical alternative participants, $F(2, 399) = 142.62$, $p < .001$, $\eta_p^2 = 0.42$. In addition, the correction only participants relied on faulty wiring significantly more than correction + atypical alternative participants did, $F(2, 399) = 6.38$, $p = .002$, $p_{Adj} = .03$, $\eta_p^2 = 0.03$, and marginally more than uncorrected participants did, $F(2, 399) = 5.63$, $p = .004$, $p_{Adj} = .05$, $\eta_p^2 = 0.03$. The uncorrected and atypical alternative participants did not differ, $F(2, 399) = 0.85$, $p = .43$, $\eta_p^2 < 0.01$. This suggests that when the initial cause is atypical, correcting that cause may afford reliance on other, more plausible causes.

Endorsement of the Alternative Causes

The different versions of the story also led to different rates of endorsement of the alternative causes (percentages reported in Table 3 in the main text). A series of logistic regressions revealed that correction + typical alternative participants endorsed the faulty wiring as a cause significantly more often than did the uncorrected, $\beta = 4.35$, Wald's $\chi^2(1) = 60.06$, $p < .001$, $OR = 77.62$ [25.82, 233.32], correction only, $\beta = 4.11$, Wald's $\chi^2(1) = 63.57$, $p < .001$, $OR = 60.92$ [22.18, 167.30], and correction + atypical alternative participants, $\beta = 4.63$, Wald's $\chi^2(1) = 53.77$, $p < .001$, $OR = 102.80$ [29.80, 354.62]. The uncorrected, correction only, and correction

+ atypical alternative participants did not significantly differ in their reliance on cannons as a cause, *p*'s > .48. The typical cause and atypical cause participants did not differ on their endorsement rate of faulty wiring, $\beta = 0.14$, Wald's $\chi^2(1) = 0.36$, $p = .55$, $OR = 1.16$, 95% CI [0.72, 1.85], and the type of Initial Cause did not interact with any of the Story Version comparisons, all *p*'s > .25.

As in Experiment 1, due to the 0% endorsement rates of a detonated cannon in the uncorrected, no alternative, and typical alternative groups, this variable could not be analyzed using a logistic regression. However, as in Experiment 1, the high rates of endorsement of the detonated cannon in the atypical alternative group serves as an indication of the influence of providing an atypical alternative on rates of endorsement of the detonated cannon as a cause.

Experiment 3

Reliance on the Initial Cause

The univariate results of Experiment 3 raise some concerns regarding the reliability of the main effect of the Initial Cause observed in the multivariate analyses (descriptive statistics are presented in Table 6 in the main text). As shown in Table S4, the main effect of Story Version was large and statistically significant for only the likelihood ratings, $F(1, 159) = 65.02$, $p < .001$, $\eta_p^2 = 0.29$; this effect was weak and non-significant for both the inference ratings, $F(1, 159) = 4.25$, $p_{adj} = .20$, $\eta_p^2 = 0.03$, and the direct references to the initial cause, $F(1, 159) = 0.37$, $p = .54$, $\eta_p^2 = 0.002$. This suggests the effect of initial cause typicality on reliance should be interpreted with some caution as typicality may primarily affect ratings of likelihood. However, some recent researchers have suggested that these likelihood ratings may be the most appropriate measure of people's underlying beliefs about the events because a participant's willingness to directly reference a particular cause should be proportional to their belief that cause was responsible (Susmann & Wegener, 2022; reference available in main text).

Table S1. *Univariate Analyses for Direct References and Likelihood Ratings for Experiments 1 and 2.*

	Direct references				Likelihood rating			
Univariate analyses	*F*	*df*	*p*	η_p^2	*F*	*df*	*p*	η_p^2
Experiment 1								
Initial cause (Gas cylinders) rating/references								
Story version	2.51	3, 206	.06	.04	9.83	3, 206	< .001	.13
Typical alternative (Faulty wiring) belief/references								
Story version	170.84	3, 206	< .001	.71	24.72	3, 206	< .001	.27
Atypical alternative (Detonated canon) belief/references								
Story version	129.88	3, 206	< .001	.65	95.88	3, 206	< .001	.58
	Direct references				Likelihood rating			
Univariate analyses	*F*	*df*	*p*	η_p^2	*F*	*df*	*p*	η_p^2
Experiment 2								
Initial cause (Cylinders or debris) belief/references								
Story version	15.31	3, 400	< .001	.10	18.20	3, 400	< .001	.12
Initial cause type	33.50	1, 400	< .001	.08	138.69	1, 400	< .001	.26
Story version x initial cause type	3.28	3, 400	.02	.02	2.30	3, 400	.08	.02
Typical alternative (Faulty wiring) belief/references								
Story version	252.09	3, 400	< .001	.65	45.78	3, 400	< .001	.26
Initial cause type	0.77	1, 400	.38	.002	3.57	1, 400	.06	.009
Story version x initial cause type	0.18	3, 400	.91	.001	3.44	3, 400	.02	.03
Atypical alternative (Detonated canon) belief/references								
Story version	322.32	3, 400	< .001	.71	140.21	3, 400	< .001	.51
Initial cause type	0.62	1, 400	.43	.002	0.04	1, 400	.84	< .001
Story version x initial cause type	0.72	3, 400	.54	.005	0.13	3, 400	.94	.001

Table S2. *Experiment 1 Mean Likelihood Rating and Between-Subjects 95% Confidence Interval for Each Alternative Cause by Version of the News Story.*

	Story Version			
	Uncorrected	No Alternative	Atypical Alternative	Typical Alternative
Atypical Alternative (Detonated Cannon)				
Direct References	0	0	3.49 [2.88, 4.10]	0
Likelihood Rating	1.62 [1.31, 1.93]	1.39 [1.14, 1.63]	4.4 [4.03, 4.77]	1.46 [1.21, 1.71]
Typical Alternative (Faulty Wiring)				
Direct References	0.17 [0.04, 0.30]	0.25 [0.09, 0.42]	0.11 [-0.02, 0.24]	3.13 [2.75, 3.50]
Likelihood Rating	3.87 [3.52, 4.22]	4.14 [3.81, 4.47]	3.3 [2.93, 3.67]	5.2 [4.94, 5.46]

Direct references represent the total uncontroverted, direct references to that item across both the factual questions and the inference questions. Likelihood Ratings represent mean Likert-type scale responses ranging from 1 (highly unlikely) to 7 (highly likely). Brackets indicate 95% confidence intervals.

Table S3. *Experiment 2 Mean Likelihood Rating and Between-Subjects 95% Confidence Interval for Each Potential Cause by Version of the News Story for the Alternative Items.*

	Story Version			
	Uncorrected	No Alternative	Atypical Alternative	Typical Alternative
Atypical Alternative (Detonated Cannon)				
Typical Cause Participants				
Direct References	0	0	3.70 [3.09, 4.31]	0.02 [-0.02, 0.06]
Likelihood Rating	1.73 [1.37, 2.09]	1.41 [1.11, 1.72]	4.22 [3.82, 4.62]	1.57 [1.26, 1.87]
Atypical Cause Participants				
Direct References	0	0	3.88 [3.27, 4.49]	0
Likelihood Rating	1.76 [1.45, 2.08]	1.45 [1.19, 1.71]	4.20 [3.85, 4.54]	1.43 [1.20, 1.66]
Typical Alternative (Faulty Wiring)				
Typical Cause Participants				
Direct References	0.19 [0.07, 0.32]	0.39 [0.15, 0.63]	0.06 [-0.01, 0.13]	3.08 [2.65, 3.51]
Likelihood Rating	4.00 [3.66, 4.34]	3.71 [3.29, 4.12]	3.48 [3.12, 3.84]	5.20 [4.91, 5.48]
Atypical Cause Participants				
Direct References	0.37 [0.12, 0.62]	0.39 [0.17, 0.62]	0.14 [0.01, 0.26]	3.14 [2.78, 3.50]
Likelihood Rating	3.71 [3.33, 4.08]	4.45 [4.16, 4.74]	3.63 [3.32, 3.93]	5.47 [5.26, 5.68]

Direct references represent the total uncontroverted, direct references to that item across both the factual questions and the inference questions. Likelihood Ratings represent mean Likert-type scale responses ranging from 1 (highly unlikely) to 7 (highly likely). Brackets indicate 95% confidence intervals.

Table S4. *Univariate Analyses for Direct References, Likelihood Ratings, and Inference Ratings for Experiment 3.*

	Direct references				Likelihood rating				Inference rating			
Univariate analyses	*F*	*df*	*p*	η_p^2	*F*	*df*	*p*	η_p^2	*F*	*df*	*p*	η_p^2
Experiment 3												
Story version	31.76	1, 159	< .001	.17	57.02	1, 159	< .001	0.26	6.90	1, 159	0.01	.04
Initial cause type	0.37	1, 159	0.54	.27	65.02	1, 159	< .001	.29	4.25	1, 159	0.04	.03
Story version x initial cause type	0.01	1, 159	.92	< .01	0.08	1, 159	0.81	< .01	0.87	1, 159	0.35	< .01