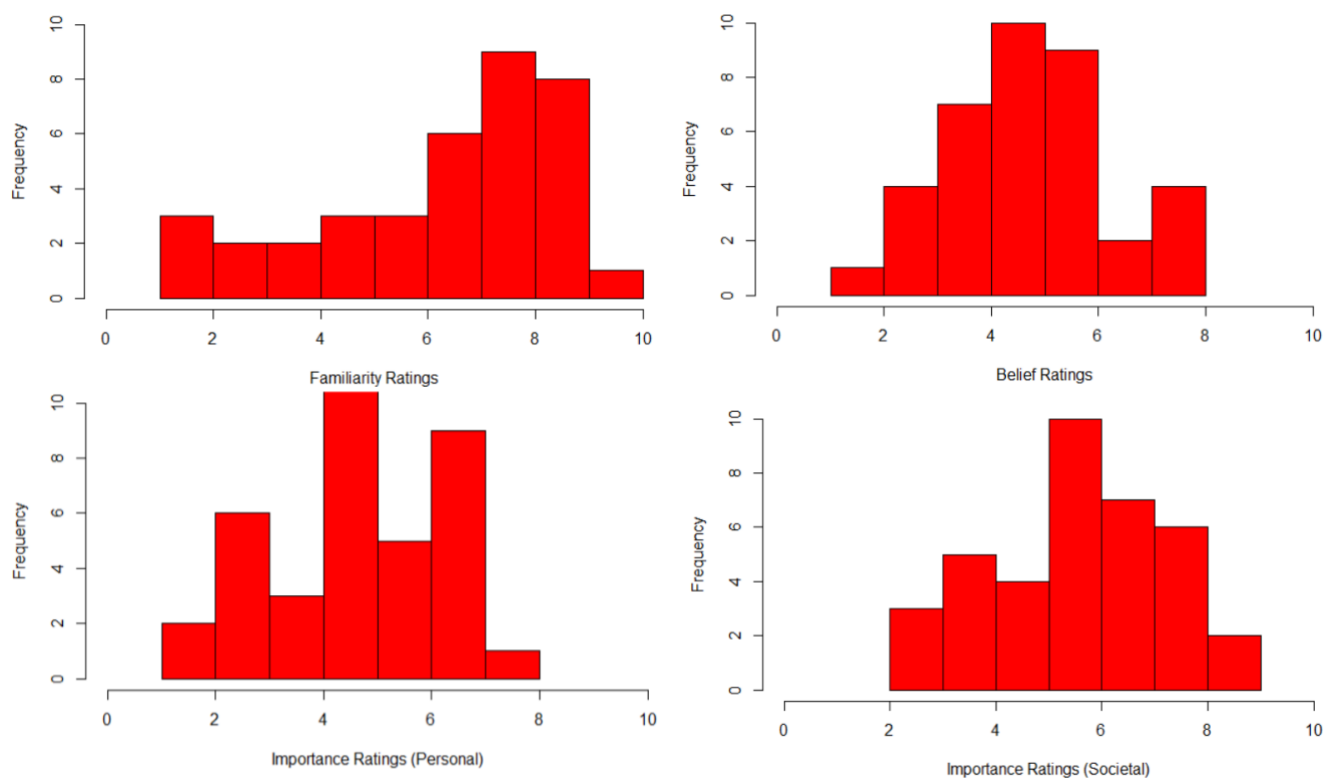
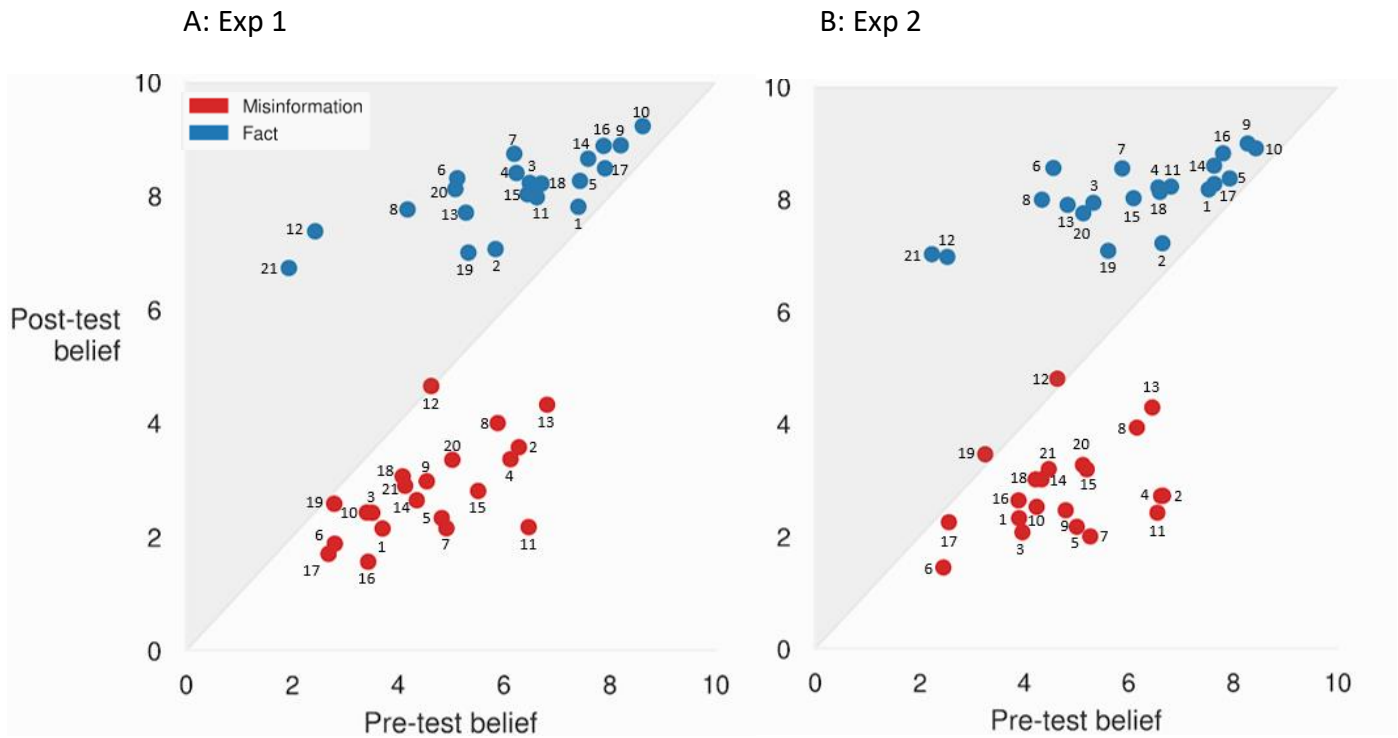


## Supplementary Information

### Supplementary Figure 1

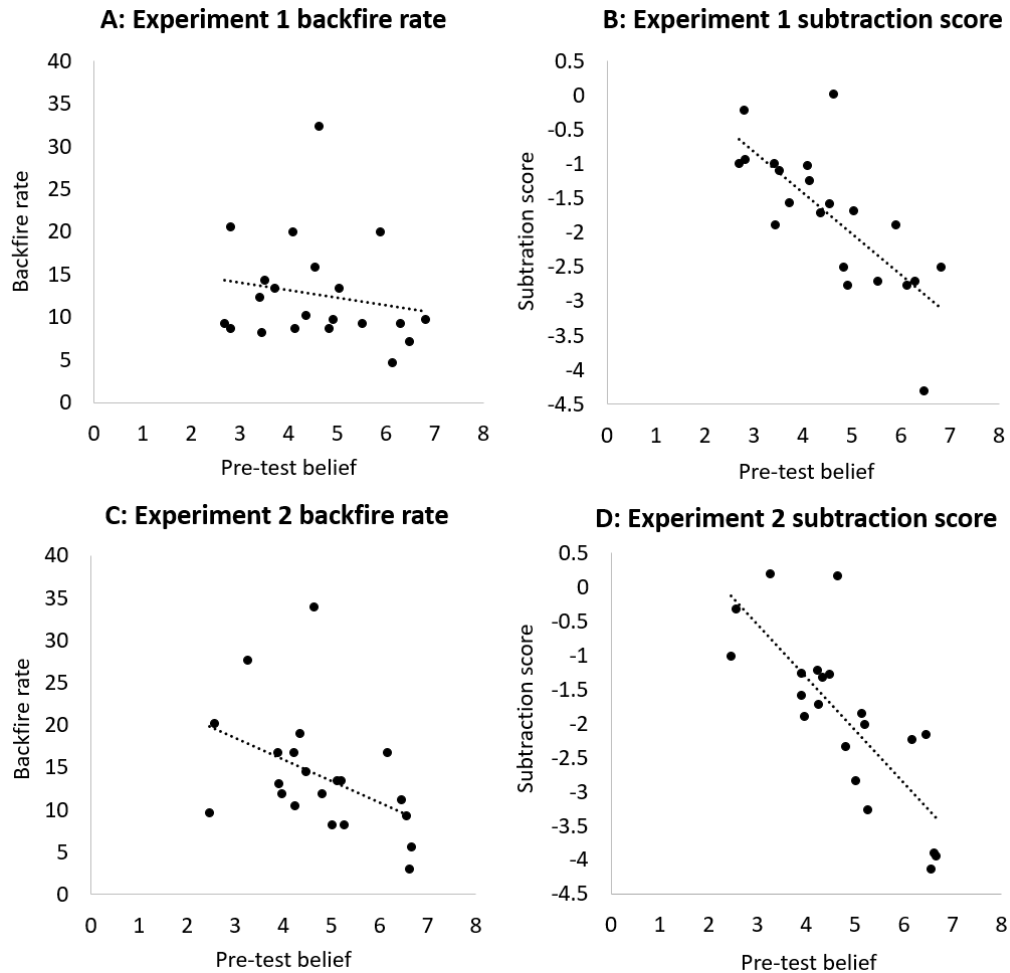


**Supplementary Figure 1.** Pilot ratings of final selection of misinformation stimuli. Items selected to ensure a range across dimensions of familiarity (top left), belief (top right), personal importance (bottom left), or societal importance (bottom right).

**Supplementary Figure 2**

**Supplementary Figure 2.** Panels A and B show the correction condition items; the grey area represents the misinformation *backfire zone*. Misinformation items are red and fact items are blue. The item numbers correspond with each misinformation and fact number in Supplementary Table 1.

### Supplementary Figure 3



**Supplementary Figure 3** Panel A shows Experiment 1 backfire rates correlated with pre-test belief ( $r = -.18$ ) and B shows subtraction scores correlated with pre-test belief ( $r = -.75$ ). Experiment 2 backfire rates and subtraction scores shown in panels C ( $r = -.45$ ) and D ( $r = .79$ ), respectively. The pre-test belief ratings are less related to the backfire rate than the subtraction score reflecting less regression-to-the-mean.

Supplementary Table 1

Misinformation	Correction	Flesch-Kincaid Reading level	Word count
Misinformation 1: The daddy longlegs is extremely venomous, but fortunately its fangs are too small to pierce human skin.	According to scientists at the University of California, people commonly use the term "daddy longlegs" to refer to two types of creatures. One is not technically a spider and does not even have venom glands or fangs. The other does have fangs that could potentially pierce human skin. However, there is no record of its bite causing any detrimental reactions.	9.5	60
Misinformation 2: Females, on average, talk more than males	There have been several studies that found females talk the same amount as males. One study, published in <i>Science</i> , recorded hundreds of students' speech between 1998 and 2004. The students wore devices that recorded 30 seconds of sound every 12.5 minutes. The authors estimated that both men and women say around 16,000 words per day.	10.5	55
Misinformation 3: Playing Mozart to your baby will boost its IQ.	This myth originated from a study published in <i>Nature</i> in 1993. The study found that adults performed better at reasoning tasks after listening to 10 minutes of Mozart. Somehow, the findings have been twisted to apply to infants and IQ in general. The theory was popularized in an unscientific book titled "The Mozart effect: Tapping the power of music to heal the body".	10.9	63
Misinformation 4: Sugar makes children hyperactive.	A review of 12 blind studies found that sugar does not have any influence on a child's behavior. Blind studies are when the children, the parents, and the researchers do not know which child received sugar and which received a placebo. Exciting environments (like birthday parties), are likely to be responsible for a child's energetic behavior.	11	56
Misinformation 5: Ostriches hide their head in the sand when frightened.	According to National Geographic, no ostrich has ever been observed to bury its head in the sand. If it did, it would likely suffocate. It may look as though ostriches are burying their head in the sand at times, when in fact they are swallowing sand and pebbles which help grind the food in its stomach and aids digestion.	8.4	59
Misinformation 6: Cancer can be cured solely through alternative therapies, without standard cancer treatment	Alternative therapies can include diet, herbs, and exercise. It is not evidence-based. Cancer cannot be cured solely by alternative therapies alone without standard cancer treatment. Scientists at Yale School of Medicine tracked cancer patients' survival between 2004 and 2013. They found that people who chose alternative medicines alone more than doubled their risk of death over a 5-year period.	10.9	60

---

Misinformation 7: Urine is an effective treatment for a jellyfish sting.	This myth originated from the television show 'Friends'. When Monica is stung by a jellyfish, the other characters remember a useful fact - that urine will remove the pain. Although this worked for the character in the show, there is no scientific evidence to support this remedy. Urinating on the affected area will only aggravate the sting.	9.8	56
Misinformation 8: Approximately 90% of communication is nonverbal	If this really were the case, we would never have to learn foreign languages. This myth stems from research in the 1960s about tone of voice by psychologist Albert Mehrabian. During a BBC interview, Mehrabian stated, "whenever I hear that misquote or misrepresentation of my findings I cringe. It should be so obvious that that's not a correct statement".	9.5	59
Misinformation 9: A fish's memory is approximately 7 seconds or less	Dr. Phil Gee, a researcher from Plymouth University, said that scientists have known for some time that that fish - including goldfish - have a memory of up to three months. Dr. Gee conducted research showing that goldfish can even learn to tell the time. The fish were successfully trained to pull a lever that released food for only one specific hour each day.	9.4	62
Misinformation 10: Most people use between 10 and 50% of their brains	Specific areas of the brain will become more active depending on what task you are performing. However, according to researchers at Johns Hopkins School of Medicine, our <i>whole</i> brain is active, at least to some extent, all the time. It is possible to know this due to brain imaging techniques like MRI scans.	9.7	53
Misinformation 11: If you cook with alcohol, it will 'cook off' and the dish will become non-alcoholic	Many people believe that it is easy to cook off alcohol due to its low boiling point. However, a whopping 75% of alcohol remains even after setting the dish alight to "flambé" it. A paper called <i>Alcohol Retention in Food Preparation</i> found that 25% of the alcohol remained after a whole hour of cooking.	10.4	54
Misinformation 12: Testosterone treatment helps older men retain their memory	Aging in men is associated with a reduction in testosterone. Due to this, some researchers thought that testosterone treatment could improve age-related memory decline. One 2017 study tested this by giving 788 older men either a testosterone treatment or a placebo for one year. The authors found no improvement in memory when compared with a placebo.	11.2	57

---

---

Misinformation 13: The gender pay gap is driven by women being paid less for the same job.	Data from 25 countries revealed that women earn 98% of the wages of men when doing the same job for the same employer. According to <i>The Economist</i> , the gender pay gap is primarily driven by the fact that women are less likely to hold high-level, high-paying jobs than men. In other words, women cluster in lower-tier jobs such as administrative roles.	10.7	61
Misinformation 14: The number of police officers killed in the line of duty is rising fast in the US	According to the National Law Enforcement Memorial Fund, there were two spikes in police officer deaths. One in the 1930s and another in the 1970s. The deadliest year was in 1930 when 310 officers were killed. In 2018, the FBI's press release stated that there were 106 officers killed in the line of duty.	9.9	54
Misinformation 15: The number of gun homicides in the US is currently at an all-time high	According to the FBI, the number of gun homicides has fallen since the mid-1990s. The peak year was 1993 when there were 7 deaths per 100,000, perhaps due to the emergence of a violent market for crack cocaine. Deaths declined by almost 50% between 1993 and 2010. While gun homicides have unfortunately risen since then, 1993 remains the all-time high.	10.9	60
Misinformation 16: Redheads are becoming extinct	The redhead gene is recessive, which means that both parents have to pass it on for their child to be red-haired. Red hair may skip a generation, but recessive genes do not "die out". According to geneticist Dr. Rutherford, red hair will persist for a long time, unless everyone who carries the gene suddenly failed to reproduce.	9	57
Misinformation 17: The placenta is more likely to be on the right side of the uterus if the baby is a boy and on the left side if it is a girl	The "Razmi method" claims that you can predict a baby's gender as early as 6 weeks, due to whether the placenta is on the right or left side. A study published in the journal <i>Ultrasound in Obstetrics and Gynecology</i> tested this hypothesis. They found no relationship between the location of the placenta and gender.	10.4	54
Misinformation 18: Sharks don't get cancer	This myth was popularized in 1992 by the unscientific book <i>Sharks Don't Get Cancer</i> . It was subsequently revealed that the author was profiting from selling shark cartilage pills. Dr. Ostrander, from the University of Hawaii, published a paper showing that sharks, skates and rays have been found to get many kinds of cancers, including malignant tumors.	9.6	56

---

---

Misinformation 19: “Marmite”, the black salty spread from UK, is primarily meat based	Although some say Marmite has a meaty flavor, it is made from yeast extract. Therefore, it can be consumed by vegetarians and even vegans. In the UK, it is commonly eaten as a savory spread on toast. According to the BBC, it was invented in the late 19th Century by a German Scientist and is a byproduct of brewing beer.	8.1	60
Misinformation 20: Saunas help to sweat out toxins	The function of sweating is to cool the body as water evaporates, rather than remove waste products. This is best left to other parts of the body, such as the liver and the kidneys. According to a Professor of Dermatology, sweat is 99% of water, with tiny amounts of salt and other minerals. This makes it impossible that saunas help sweat out toxins.	8.7	63
Misinformation 21: Mercury in vaccines can cause harm	There are two types of mercury. Methyl mercury builds up in the body and is toxic. Ethyl mercury—the type within vaccines—is excreted rapidly from the body. In 2006, an expert panel assembled by the World Health Organization concluded that there was “no evidence of toxicity in infants, children or adults exposed to [mercury] in vaccines”.	10.4	57

---

Supplementary Table 2

Fact	Affirmation	Reading level	Word count
Fact 1: Wifi does not cause cancer	There is no evidence that Wi-Fi can cause cancer. In 2013, a review by a Professor of Radiation Oncology found that there was no evidence that Wi-Fi has any adverse health effects. The exposure that we get from our Wi-Fi router is far below safety limits of radiofrequency energy. Plus, these devices usually transmit only 0.1% of the time.	10.7	59
Fact 2: Illegal immigrants living in the US do not commit crimes at higher rates than most American	There are several studies showing that illegal immigrants to the US commit crimes at lower rates than locals. One study found that illegal immigrants were 44% less likely to be in jail than locals. A separate study, published in the journal <i>Criminology</i> , found that there was a <i>decrease</i> in violent crime when there was an increased number of illegal immigrants.	11.3	59
Fact 3: Caucasians are often born with blue eyes which can subsequently change color.	A Caucasian baby is often born with blue eyes, which may potentially change color as the baby ages. According to scientists at Maimonides Medical Center, the iris produces melanin as the eye is exposed to sunlight. Melanin is a pigment that makes the eye darker. Eye color in most cases is permanent by a child's first birthday.	8.8	57
Fact 4: Some sleepwalkers can do complex tasks.	Sleepwalking occurs more often in children than adults, and it can involve just about any task. Actions can include getting dressed, driving a car, or cooking a meal. Sleepwalking is increasingly a difficult legal area. According to the Minnesota Regional Sleep Disorders Center, people using the "I did it in my sleep" defence is on the rise.	9.6	56
Fact 5: Some body gestures are universally understood	According to psychologists from San Francisco State University, there are some gestures which are universally used. For example, athletes from all cultures make the same posture when they win: arms raised in a "V" with the chin raised high. The same is true for athletes who have been blind from birth, suggesting that the victory pose is innate.	9	58
Fact 6: People are taller in the morning than in the evening	We have known for well over a century that people are taller in the morning, and we shrink throughout the day. This is due to gravity compressing our spine. In 1935, DePukey measured 1216 participants between 5 and 90 years old, and found the average person was 1.5cm shorter in the evening compared to the morning.	10.8	56



---

Fact 7: An opera singer's voice can shatter glass	Every piece of glass has a natural resonant frequency, which is the speed at which it will vibrate with a sound wave. If a person sings this frequency loud and long enough, the glass will shatter. According to a mechanical engineer from Columbia University, this occurs due to the microscopic defects the glass has to begin with.	11.2	58
Fact 8: Too many carrots will turn your skin orange	Beta-carotene is a pigment that is in carrots and sweet potatoes. Eating foods high in beta-carotene can indeed cause skin to become orange or yellow. It is a benign condition which mostly affects young children and vegetarians. According to a 1952 scientific paper, treatment involves simply not eating carrots for an extended period.	11.1	53
Fact 9: Yawning is contagious	When adults are shown videos of people yawning, many begin to yawn themselves. In fact, it is so contagious that simply thinking about it (or reading about it), is sufficient to initiate a yawn. The reason why we do this is still being debated, but research from the University of Connecticut suggests it may be associated with empathy.	11.0	5
Fact 10: Dogs shouldn't eat chocolate	Dogs can experience dangerous effects from eating chocolate, and in some cases it could be lethal. According to pharmacology research from the 1980s, chocolate contains a compound called theobromine. It has no adverse effect on humans, but it is processed more slowly in a dog's body. It can affect their heart, central nervous system, and kidneys.	9.6	55
Fact 11: Laughing improves vascular function	Laughter reduces stress hormones and has a positive impact on vascular function. A paper in 2010 called the <i>Effect of Mirthful Laughter on Vascular Function</i> where participants were shown either a clip of a comedy or a documentary. Laughter in the comedy condition led to increased blood flow. There was no difference in the condition where people were shown the documentary.	10.6	61
Fact 12: People with high IQ are more likely to have glasses	A 2017 study published in <i>Scientific Reports</i> showed that intelligent people are twice as likely to be near-sighted as those who have low IQ scores. This could be because exposure to daylight is necessary for healthy eye development, and children who study harder spend more time indoors. However, it is also possible there are genes that link eyesight and IQ.	11.2	60

---

---

Fact 13: A cockroach can live for over a week without its head	According to a physiologist at the University of Massachusetts Amhurst, cockroaches can survive decapitation for several reasons: (1) they breathe through 'spiracles', little holes in its body, (2) their nervous system is located throughout their body so are not reliant on their brain, and (3) they don't need much food but will eventually die of starvation.	10.1	55
Fact 14: More than 80% of the ocean remains unexplored	The ocean covers more than 70% of the planet's surface, yet more than 80% of the ocean remains unexplored, according to the US National Ocean Service. This not only means it is unseen by human eyes, but that it has not been mapped. This is because the ocean is exceedingly vast, there is no light, and often crushing pressure.	9.4	59
Fact 15: Honey is antibacterial	Honey has historically been used to treat a variety of ailments. According to biomedical scientists, it has well known antibacterial properties. These include high sugar content and low pH levels. Manuka honey from Australia and New Zealand is particularly renowned for its antibacterial properties. It is often referred to as "medical grade" honey.	11.4	53
Fact 16: A tsunami is a tidal wave caused by an earthquake	A tsunami is a tidal wave (or a series of waves) typically caused by undersea earthquakes at tectonic plate boundaries. The term is taken from Japanese, meaning "harbor wave". According to National Geographic, their height can reach over 100 feet, and race across the sea at 500 miles an hour. This is about as fast as a jet plane.	8.5	59
Fact 17: Elephants have a remarkable memory	Elephants have been repeatedly shown to have remarkable memories. This is particularly the case when it comes to remembering other elephants and routes to water sources. They are also good at keeping track of the location of other elephants. According to psychologist Richard Byrne, they can keep track of up to 30 companions at a time.	9.1	53
Fact 18: Some people sneeze after exposure to sunlight	Sneezing due to sunlight is known as a "photic sneeze". It is a reflex that can occur due to any bright light or a change in light intensity. It affects between 18 and 35% of the population and has a large genetic component. A study by University of Alabama found that 94% of photic sneezers were Caucasian and 67% were female.	8.9	61

---

---

Fact 19: Hypnosis is effective for pain management	There are many studies suggesting that hypnosis can help with pain. A 2016 review of 29 randomized clinical trials showed that hypnosis decreased pain. This was particularly true for minor surgery but also helped with child birth, burns and chronic pain. Hypnosis for pain generally involves suggestions for relaxation, comfort and mental imagery.	11.1	53
Fact 20: Dogs can smell cancer	Dogs perform better than state-of-the-art screening tests at sniffing out people with some cancers. Cancer patients have traces of chemicals in their breath, and dogs can detect them. The University of California conducted a study where dogs correctly detected cancer in 99% of lung cancer patients. Only 1% of the time did they mistakenly assume that healthy people had cancer.	10.3	60
Fact 21: Humans can regrow the tips of fingers and toes after they have been amputated	Humans have an amphibian-like trait of being able to regenerate, although it is limited to the very tips of our fingers and toes. A study in 1970 found that if the individual was under the age of 10, they had a limited capability to even regrow bone. This is due to stem cells at the base of each nail, which aids the ability to rebuild the tip.	11	57

---

**Supplementary Table 3**

<b>Misinformation</b>	<b>Reliability (<math>\rho</math>)</b>	<b>Z ratio between control and correction</b>	<b>t test pre-test control and post-test correction</b>
Misinformation 1: The daddy long legs spider is extremely venomous, but fortunately its fangs are too small to pierce human skin	0.62	Exp 1: $Z = 3.34, p < 0.001$ Exp 2: $Z = 3.71, p < 0.001$	Exp 1: $t = 6.15, p < 0.001$ Exp 2: $t = 6.22, p < 0.001$
Misinformation 2: Females, on average, talk more than males	0.67	Exp 1: $Z = 2.93, p = 0.003$ Exp 2: $Z = 4.80, p < 0.001$	Exp 1: $t = 6.91, p < 0.001$ Exp 2: $t = 11.63, p < 0.001$
Misinformation 3: Playing Mozart to your baby will boost its IQ.	0.64	Exp 1: $Z = 2.95, p = 0.003$ Exp 2: $Z = 3.98, p < 0.001$	Exp 1: $t = 4.15, p < 0.001$ Exp 2: $t = 5.53, p < 0.001$
Misinformation 4: Sugar makes children hyperactive.	0.74	Exp 1: $Z = 2.90, p = 0.004$ Exp 2: $Z = 4.11, p < 0.001$	Exp 1: $t = 8.68, p < 0.001$ Exp 2: $t = 14.11, p < 0.001$
Misinformation 5: Ostriches hide their head in the sand when frightened	0.66	Exp 1: $Z = 4.04, p < 0.001$ Exp 2: $Z = 3.62, p < 0.001$	Exp 1: $t = 9.07, p < 0.001$ Exp 2: $t = 5.47, p < 0.001$
Misinformation 6: Cancer can be cured solely through alternative therapies, without standard cancer treatment	0.65	Exp 1: $Z = 2.85, p = 0.004$ Exp 2: $Z = 2.26, p = 0.024$	Exp 1: $t = 1.61, p = 0.107$ Exp 2: $t = 2.24, p = 0.026$
Misinformation 7: Urine is an effective treatment for a jellyfish sting	0.72	Exp 1: $Z = 2.89, p = 0.004$ Exp 2: $Z = 4.83, p < 0.001$	Exp 1: $t = 8.64, p < 0.001$ Exp 2: $t = 10.30, p < 0.001$
Misinformation 8: Approximately 90% of communication is nonverbal	0.50	Exp 1: $Z = 3.25, p = 0.001$ Exp 2: $Z = 3.95, p < 0.001$	Exp 1: $t = 4.90, p < 0.001$ Exp 2: $t = 4.60, p < 0.001$

---

Misinformation 9: A goldfish's memory is approximately 7 seconds or less	0.54	Exp 1: $Z = 3.21, p = 0.001$ Exp 2: $Z = 4.36, p < 0.001$	Exp 1: $t = 4.48, p < 0.001$ Exp 2: $t = 8.17, p < 0.001$
Misinformation 10: Most people use between 10 and 50% of their brains	0.70	Exp 1: $Z = 2.48, p = 0.013$ Exp 2: $Z = 3.81, p < 0.001$	Exp 1: $t = 3.02, p = 0.003$ Exp 2: $t = 4.22, p < 0.001$
Misinformation 11: If you cook with alcohol, it will 'cook off' and the dish will become non-alcoholic	0.75	Exp 1: $Z = 2.60, p = 0.009$ Exp 2: $Z = 3.08, p = 0.002$	Exp 1: $t = 16.17, p < 0.001$ Exp 2: $t = 17.21, p = 0.002$
Misinformation 12: Testosterone treatment helps older men retain their memory	0.38	Exp 1: $Z = 0.39, p = 0.693$ Exp 2: $Z = 1.66, p = 0.097$	Exp 1: $t = -0.87, p = 0.383$ Exp 2: $t = -1.84, p = 0.066$
Misinformation 13: The gender pay gap is driven by women being paid less for the same job.	0.63	Exp 1: $Z = 1.86, p = 0.063$ Exp 2: $Z = 2.05, p = 0.040$	Exp 1: $t = 7.88, p < 0.001$ Exp 2: $t = 8.98, p < .001$
Misinformation 14: The number of police officers killed in the line of duty is rising fast in the US	0.56	Exp 1: $Z = 3.79, p < 0.001$ Exp 2: $Z = 0.84, p = 0.401$	Exp 1: $t = 7.79, p < 0.001$ Exp 2: $t = 3.96, p < .001$
Misinformation 15: The number of gun homicides in the US is currently at an all-time high	0.67	Exp 1: $Z = 2.16, p = 0.031$ Exp 2: $Z = -0.45, p = 0.651$	Exp 1: $t = 10.84, p < 0.001$ Exp 2: $t = 9.77, p < .001$
Misinformation 16: Redheads are becoming extinct	0.59	Exp 1: $Z = 6.27, p < 0.001$ Exp 2: $Z = 6.23, p < 0.001$	Exp 1: $t = 4.18, p < 0.001$ Exp 2: $t = 1.08, p < .280$
Misinformation 17: The placenta is more likely to be on the right side of the uterus if the baby is a boy and on the left side if it is a girl	0.48	Exp 1: $Z = 5.37, p < 0.001$ Exp 2: $Z = 2.41, p = 0.016$	Exp 1: $t = 2.68, p = 0.008$ Exp 2: $t = 0.59, p = 0.556$
Misinformation 18: Sharks don't get cancer	0.50	Exp 1: $Z = 2.83, p = 0.005$ Exp 2: $Z = 5.20, p < 0.001$	Exp 1: $t = 1.99, p = 0.047$ Exp 2: $t = 3.34, p < 0.001$

---

---

Misinformation 19: “Marmite”, the black salty spread, is primarily meat based	0.42	Exp 1: $Z = 0.67, p = 0.504$ Exp 2: $Z = 1.89, p = 0.058$	Exp 1: $t = 2.40, p = 0.017$ Exp 2: $t = -2.30, p = 0.022$
Misinformation 20: Saunas help to sweat out toxins	0.75	Exp 1: $Z = 1.69, p = 0.092$ Exp 2: $Z = 2.99, p = 0.003$	Exp 1: $t = 5.84, p < 0.001$ Exp 2: $t = 5.74, p < .001$
Misinformation 21: Mercury in vaccines can cause harm.	0.70	Exp 1: $Z = 3.58, p < 0.001$ Exp 2: $Z = 2.11, p = 0.035$	Exp 1: $t = 3.17, p = 0.002$ Exp 2: $t = 3.19, p = .002$

---

### Supplementary Table 4

#### *Experiment 1: Hierarchical Regression Analysis with Reliability and Novelty*

Variables	$\beta$	$t$	$p$	$R^2$	$R^2_{adj}$	$\Delta R^2$
Step 1				.58	.56	.58
Reliability	-44.53	-5.12	<.001			
Step 2				.61	.57	.03
Reliability	-62.25	-3.56	.002			
Novelty	0.87	1.16	.260			

*Note.* The hierarchical multiple regression revealed that at Stage one, reliability contributed significantly to the regression model, ( $F(1,19) = 26.21, p < .001$ ) and accounted for 57.97% of the variation in backfire rate. Introducing the novelty variable only explained an additional 2.94% of variation in backfire rate, and this change in  $R^2$  was non-significant,  $F(1,18) = 1.35, p = .260$ .

### Supplementary Table 5

#### *Experiment 2: Hierarchical Regression Analysis with Reliability and Novelty*

Variables	$\beta$	$t$	$p$	$R^2$	$R^2_{adj}$	$\Delta R^2$
Step 1				0.71	.70	.71
Reliability	-55.49	-6.83	<.001			
Step 2				0.78	.75	.07
Reliability	-28.54	-2.06	.054			
Novelty	-1.42	2.30	.034			

*Note.* The hierarchical multiple regression revealed that at Stage one, reliability contributed significantly to the regression model, ( $F(1,19) = 46.60, p < .001$ ) and accounted for 71.04% of the variation in backfire rate. Introducing the familiarity variable explained an additional 6.58% of variation in backfire rate, and this change in  $R^2$  was significant,  $F(1,18) = 5.29, p = .034$ .



### Supplementary Table 6

#### *Experiment 1: Hierarchical Regression Analysis with Reliability and Illusory Truth*

Variables	$\beta$	$t$	$p$	$R^2$	$R^2_{adj}$	$\Delta R^2$
Step 1				.58	.56	.58
Reliability	-44.53	-5.12	<.001			
Step 2				.60	.55	.02
Reliability	-62.25	-3.56	.009			
Illusory truth	0.87	1.16	.389			

*Note.* The hierarchical multiple regression revealed that at Stage one, reliability contributed significantly to the regression model, ( $F(1,19) = 26.21, p < .001$ ) and accounted for 57.97% of the variation in backfire rate. Introducing the novelty variable explained an additional 1.75% of variation in backfire rate, but this change in  $R^2$  was non-significant,  $F(1,18) = .78, p = .389$ .

### Supplementary Table 7

#### *Experiment 2: Hierarchical Regression Analysis with Reliability and Illusory Truth*

Variables	$\beta$	$t$	$p$	$R^2$	$R^2_{adj}$	$\Delta R^2$
Step 1				0.71	.70	.70
Reliability	-55.49	-6.83	<.001			
Step 2				0.71	.68	.001
Reliability	-53.37	-4.69	<.001			
Illusory truth	0.83	0.27	.787			

*Note.* The hierarchical multiple regression revealed that at Stage one, reliability contributed significantly to the regression model, ( $F(1,19) = 46.60, p < .001$ ) and accounted for 71.04% of the variation in backfire rate. Introducing the familiarity variable explained an additional .1% of variation in backfire rate, and this change in  $R^2$  was non-significant,  $F(1,18) = .07, p = .787$ .

### Supplementary Table 8

#### *Experiment 2: Hierarchical Regression Analysis with Reliability and Surprise*

Variables	$\beta$	$t$	$p$	$R^2$	$R^2_{adj}$	$\Delta R^2$
Step 1				0.71	.70	.70
Reliability	-55.49	-6.83	<.001			
Step 2				0.71	.68	.008
Reliability	-48.86	-4.58	<.001			
Surprise	0.65	0.27	.720			

*Note.* The hierarchical multiple regression revealed that at Stage one, reliability contributed significantly to the regression model, ( $F(1,19) = 46.60, p < .001$ ) and accounted for 71.04% of the variation in backfire rate. Introducing the surprise variable explained an additional .8% of variation in backfire rate, and this change in  $R^2$  was non-significant,  $F(1,18) = .16, p = .695$ .

## Supplemental Analyses 1: Fact analyses

### *Comparing Group Level Belief between Control and Correction Groups*

To compare overall belief differences between affirmation and control conditions, we conducted a 2 x 2 between-within ANOVA on belief ratings collapsed across items, with factors fact-check (affirmation vs. no-correction control) and pre/post retention interval. A significant interaction revealed that, on average, participants in the affirmation condition updated their beliefs in the intended direction to a greater extent than in the control condition; Experiment 1:  $F(1,386) = 207; p < .001; MSE = .55; \eta p^2 = .35$ ; Experiment 2:  $F(1,530) = 220.59; p < .001; MSE = .58; \eta p^2 = .29$ .

### *Affirmation Group's Frontfire Rate vs. Control Group's Belief Reduction Rate*

We define the *frontfire rate* as the percentage of people that decrease their belief by more than two or more points after an affirmation. The control group's *belief reduction rate* is the percentage of individuals that reduce their belief by more than two points between the pre-test and post-test. We first conducted a t-test on the item frontfire rates vs. belief reduction rates. In Experiment 1, we found that the percentage of people in the control condition that increased their belief ( $M = 15.57\%$ ) was nearly twice the rate of those in the correction condition ( $M = 8.03\%$ ),  $t(20) = -10.16, p < .001$ . Experiment 2 replicated these findings, where a significantly higher percentage of participants in the control condition increased their belief ( $M = 13.52\%$ ) than those in the correction condition ( $M = 9.88\%$ ),  $t(20) = -4.80; p < .001$ .

### *Reliability and Frontfire*

To robustly estimate the test-retest reliability of each item, we correlated pre- and post-test belief ratings from participants who were in the control group collapsed across both experiments. We used Spearman's  $\rho$  given that the data were not normally distributed. Reliability was not correlated with frontfire in either Experiment 1 ( $p = .96$ ) or Experiment 2 ( $p = .47$ ).