Supplementary Materials

Supplement A: Pre-registered Hypotheses and Results

Table S1

Pre-registered hypotheses and results

Experiment	Hypothesis	Supported
Experiment 1	**Complete dataset**	
	1. For both the immediate and delayed groups:	
	a. Both corrections will reduce belief in the cancer statements compared to the control	Yes
	b. The truth sandwich will be equivalent to the bottom-loaded refutation (Horton et al. 2023)	Yes
	2. For both the immediate and delayed groups:	
	a. Both correction groups will reduce inference ratings in comparison to the control	Yes
	b. The truth sandwich will be equivalent to the bottom-loaded refutation (Horton et al. 2023)	Yes
	High CAMBI-NH	
	3. For both the immediate and delayed groups:	
	a. Both corrections will reduce belief in the cancer statements compared to the control	Yes
	b. The truth sandwich will be equivalent to the bottom-loaded refutation (Horton et al. 2023)	Yes
	4. For both the immediate and delayed groups:	
	a. Both correction groups will reduce inference ratings in comparison to the control	Yes
	b. The truth sandwich will be equivalent to the bottom-loaded refutation (Horton et al. 2023)	Yes
Experiment 2	**Complete Dataset**	
	1. For both the immediate and delayed groups:	
	a. Both corrections will reduce belief in the cancer statements compared to the control	Yes
	b. The truth sandwich will be equivalent to the bottom-loaded refutation	Yes

(Horton et al. 2023)	
c. There will be belief regression where the corrections are less effective in the delayed than immediate condition.	Yes
2. For both the immediate and delayed groups:	
a. Both correction groups will reduce inference ratings in comparison to the control	Yes
b. The truth sandwich will be equivalent to the bottom-loaded refutation (Horton et al. 2023)	Yes
c. Inference questions will be higher in the delayed than immediate condition.	Yes
High CAMBI-NH	
1. For both the immediate and delayed groups:	
a. Both corrections will reduce belief in the cancer statements compared to the control	Yes
b. The truth sandwich will be equivalent to the bottom-loaded refutation (Horton et al. 2023)	Yes
c. There will be belief regression where the corrections are less effective in the delayed than immediate condition.	Yes
2. For both the immediate and delayed groups:	
a. Both correction groups will reduce inference ratings in comparison to the control	Partially
i. Immediate	Yes
ii. Delay	No
b. The truth sandwich will be equivalent to the bottom-loaded refutation (Horton et al. 2023)	Yes
c. Inference questions will be higher in the delayed than immediate condition.	Yes

Supplement B: Pilot Data

Table S2

Pilot data for misinformation items

Misinformation Item	Belief	Considered	Heard Before	Test-retest Reliability (ρ)
1. Cancer has a strong genetic component (i.e., cancer is "inheritable" or runs in families)	7.26	7.22	7.29	.50
2. Microwaving plastic can release cancer-causing toxins into food	6.27	6.13	7.07	.43
3. Artificial sweeteners can increase your risk of developing cancer	5.83	5.76	6.88	.59
4. Aluminum, which is commonly found in antiperspirants, has been linked to breast cancer	5.77	5.45	6.38	.68
5. Living in a polluted city increases your risk of lung cancer more than smoking does.	5.50	4.51	4.57	.34
6. Ingredients in red wine have been shown to prevent both colon and prostate cancer	5.16	3.7	4.95	.58
7. Stress causes cancer	4.78	4.4	4.63	.68
8. Eating sugar causes cancer to grow and spread more quickly	4.55	3.93	4.25	.77
9. Sharks don’t get cancer	4.46	1.57	1.73	.45
10. Doctors rarely prescribe cancer treatments like chemotherapy to older people because of a higher risk for health complications.	4.34	3.26	3.07	.43
11. Fluoride in water can increase your likelihood of developing cancer	3.91	3.56	4.01	.62
12. Electromagnetic fields produced by microwaves can lead to cancer	3.61	3.49	4.38	.62

Overall	**5.12**	**4.42**	**4.93**	**.63**

Note. Belief ratings for test-retest reliability were collected one week apart.

Table S3

Pilot data for fact items

Fact Items	Belief	Considered	Heard Before	Test-retest Reliability (ρ)
1. Processed meats, such as bacon, are associated with increased risk of cancer	2.70	2.31	2.94	.74
2. Most people diagnosed with breast cancer have no known family history of the disease	3.28	3.57	2.77	.35
3. Breast cancer is more common in the left breast than in the right	3.88	1.30	1.24	.38
4. Naked mole rats don't get cancer	4.10	1.41	1.51	.35
5. Some types of cancer are preventable with vaccination.	4.77	4.03	4.14	.67
6. The ancient Egyptians were the first to describe cancer	5.03	1.77	1.83	.39
7. The word cancer comes from the Latin for 'crab'.	5.06	2.26	2.57	.72
8. In the U.S., the overall cancer mortality rate has declined since the 1990s	5.23	3.90	3.53	.48
9. Dogs can smell cancer.	5.26	4.44	5.47	.82
10. The duration and amount of exposure to ovarian hormones (estrogen and progesterone) have been associated with higher breast cancer risk	5.33	3.17	3.34	.51
11. Approximately 40% of people will be diagnosed with cancer at some point during their lifetimes	5.36	4.16	3.70	.56
12. The Chernobyl accident alone was predicted to have caused 5,000 cancer cases	6.79	4.77	4.53	.68
Overall	**4.73**	**3.09**	**3.13**	**.66**

Supplement C: Correction, Affirmation, and Inference Materials

Table S4

Bottom-loaded refutation and truth sandwich corrections for misinformation items

Misinformation Items	Bottom-loaded Refutation	Truth Sandwich
Cancer has a strong genetic component (i.e., cancer is "inheritable" or runs in families)	One propagated view is that cancer has a strong genetic component (i.e., cancer is "inheritable" or runs in families): this is false, according to the National Cancer Institute. Cancer Research UK reports that only between 5-10% of cancer diagnoses are linked to inheriting faulty genes. Most cancers develop because of a combination of chance and our environment, not because we have inherited a specific cancer gene fault. In other words, most cancers are caused by gene faults or mutations that happen during our lifetime.	Cancer Research UK reports that only between 5-10% of cancer diagnoses are linked to inheriting faulty genes. One propagated view is that cancer has a strong genetic component (i.e., cancer is "inheritable" or runs in families): this is false, according to the National Cancer Institute. Most cancers develop because of a combination of chance and our environment, not because we have inherited a specific cancer gene fault. In other words, most cancers are caused by gene faults or mutations that happen during our lifetime.
Artificial sweeteners can increase your risk of developing cancer	It was once assumed that artificial sweeteners can increase your risk of developing cancer: this is false. According to the *FDA*, there is no evidence for a causal role of artificial sweeteners in cancer development. Artificial sweeteners are chemically synthesized substances that can be used instead of sucrose (table sugar) to sweeten foods and beverages. Six artificial sweeteners have been approved to be safe by the *FDA*.	Artificial sweeteners are chemically synthesized substances that can be used instead of sucrose (table sugar) to sweeten foods and beverages. Six artificial sweeteners have been approved to be safe by the *FDA*. It was once assumed that artificial sweeteners can increase your risk of developing cancer: this is false. According to the *FDA*, there is no evidence for a causal role of artificial sweeteners in cancer development.

	Any concern likely comes from a study in the 1960s that found one artificial sweetener caused bladder cancer in laboratory rats. This sweetener was banned in 1969, even though subsequent studies failed to replicate the finding and no such findings have been observed in humans.	Any concern likely comes from a study in the 1960s that found one artificial sweetener caused bladder cancer in laboratory rats. This sweetener was banned in 1969, even though subsequent studies failed to replicate the finding and no such findings have been observed in humans.
Aluminum, which is commonly found in antiperspirants, has been linked to breast cancer	Aluminum in antiperspirants has sometimes been linked to breast cancer: this is false. In fact, according to the *National Cancer Institute*, no studies to date have found that aluminum contributes to increased breast cancer risks. Aluminum-based compounds are used as the active ingredient in antiperspirants. Although these compounds form a temporary “plug” within the sweat duct that stops the flow of sweat to the skin's surface, they are safe to use. A review published in *Critical Reviews in Toxicology* concluded that the use of aluminum containing antiperspirants was safe.	Aluminum-based compounds are used as the active ingredient in antiperspirants. Although these compounds form a temporary “plug” within the sweat duct that stops the flow of sweat to the skin's surface, they are safe to use. Aluminum in antiperspirants has sometimes been linked to breast cancer: this is false. In fact, according to the *National Cancer Institute*, no studies to date have found that aluminum contributes to increased breast cancer risks. A review published in *Critical Reviews in Toxicology* concluded that the use of aluminum containing antiperspirants was safe.
Living in a polluted city increases your risk of lung cancer more than smoking does.	It is sometimes said that living in a polluted city increases your risk of lung cancer more than smoking does: this is false. According to *Cancer Research UK*, outdoor air pollution causes roughly 1 in 10 cases of lung cancer, whereas smoking causes a more dramatic 9 in 10 cases.	According to *Cancer Research UK*, outdoor air pollution causes roughly 1 in 10 cases of lung cancer, whereas smoking causes a more dramatic 9 in 10 cases. It is sometimes said that living in a polluted city increases your risk of lung cancer more than smoking does: this is false.

	Globally, a 2020 study published in the peer-reviewed journal *CA: A Cancer Journal For Clinicians* found that the proportion of lung cancer deaths attributable to pollution was second to tobacco smoking (14.1% vs 63.2%, respectively).	Globally, a 2020 study published in the peer-reviewed journal *CA: A Cancer Journal For Clinicians* found that the proportion of lung cancer deaths attributable to pollution was second to tobacco smoking (14.1% vs 63.2%, respectively).
Ingredients in red wine have been shown to prevent both colon and prostate cancer	It has been purported that drinking red wine can prevent both colon and prostate cancer: this is false, according to the National Cancer Institute. *The National Toxicology Program of the US Department of Health and Human Service* advises that alcohol consumption can cause several types of cancer, including breast, throat, mouth, liver, and colon. The evidence indicates that the more alcohol a person drinks—particularly the more alcohol a person drinks regularly over time—the higher their risk of developing an alcohol-associated cancer.	*The National Toxicology Program of the US Department of Health and Human Service* advises that alcohol consumption can cause several types of cancer, including breast, throat, mouth, liver, and colon. It has been purported that drinking red wine can prevent both colon and prostate cancer: this is false, according to the National Cancer Institute. The evidence indicates that the more alcohol a person drinks—particularly the more alcohol a person drinks regularly over time—the higher their risk of developing an alcohol-associated cancer.
Stress causes cancer	One popular view is that stress is a direct cause of cancer: this is false. There is no evidence that people who are more stressed are more likely to get cancer. *Cancer Research UK* reports that stress may cause people to engage in specific behaviors that increase the risk of cancer (such as smoking, overeating, or drinking heavily). Studies published by the *British Medical Journal* have found that people with different levels of stress	*Cancer Research UK* reports that stress may cause people to engage in specific behaviors that increase the risk of cancer (such as smoking, overeating, or drinking heavily). One popular view is that stress is a direct cause of cancer: this is false. There is no evidence that people who are more stressed are more likely to get cancer. Studies published by the *British Medical Journal* have found that people with different levels of stress

	(perceived stress levels, frequency of stress, work stress, job strain, adverse life events) have the same risk of developing cancer.	(perceived stress levels, frequency of stress, work stress, job strain, adverse life events) have the same risk of developing cancer.
Eating sugar causes cancer to grow and spread more quickly	Some individuals claim that eating sugar causes cancer to grow and spread more quickly: this is false. *The Mayo Clinic* reports that eating sugar does not make cancer grow faster, and depriving yourself of sugar does not make cancer grow more slowly. All cells in our body including cancer cells use sugar (also known as glucose) for energy. However, even without consuming sugar, your body has backup mechanisms that convert other sources of fuel, such as fat and protein, to glucose. According to the *Dana-Farber Cancer Institute*, there is some evidence that sugar may be indirectly linked to developing cancer. Sugar is a major source of extra calories, which can contribute to weight gain and there are several cancers linked to obesity.	All cells in our body including cancer cells use sugar (also known as glucose) for energy. However, even without consuming sugar, your body has backup mechanisms that convert other sources of fuel, such as fat and protein, to glucose. Some individuals claim that eating sugar causes cancer to grow and spread more quickly: this is false. *The Mayo Clinic* reports that eating sugar does not make cancer grow faster, and depriving yourself of sugar does not make cancer grow more slowly. According to the *Dana-Farber Cancer Institute*, there is some evidence that sugar may be indirectly linked to developing cancer. Sugar is a major source of extra calories, which can contribute to weight gain and there are several cancers linked to obesity.
Sharks don’t get cancer	A claim has circulated that sharks don’t get cancer: this is false. This myth was popularized in 1992 by the unscientific book Sharks Don't Get Cancer. It was subsequently revealed that the author was profiting from selling shark cartilage pills. Dr. Ostrander, a professor in the *Department of Biology and Department of Comparative Medicine at Johns Hopkins University*, published a paper	Dr. Ostrander, a professor in the *Department of Biology and Department of Comparative Medicine at Johns Hopkins University*, published a paper showing that sharks, skate fish and rays can get many kinds of cancers, including malignant tumors. A claim has circulated that sharks don’t get cancer: this is false. This myth was popularized in 1992 by the unscientific book Sharks Don't Get Cancer. It

	showing that sharks, skate fish and rays can get many kinds of cancers, including malignant tumors. Studies published in the journal *Cancer* also showed that shark cartilage supplements were no better than placebo at improving cancer survival rates.	was subsequently revealed that the author was profiting from selling shark cartilage pills. Studies published in the journal *Cancer* also showed that shark cartilage supplements were no better than placebo at improving cancer survival rates.
Doctors rarely prescribe cancer treatments like chemotherapy to older people because of a higher risk for health complications.	Recently there have been claims made that doctors rarely prescribe cancer treatments like chemotherapy to older people because of a higher risk for health complications: this is false. According to the *H. Lee Moffitt Cancer Center*, treatment of older cancer patients frequently involves chemotherapy. The efficacy of chemotherapy for most tumors is not age dependent. Although various health complications sometimes accompany old age, more carefully crafted treatment plans are required. Complications and side effects seen in older adults are often related to managing multiple medications, but chemotherapy is certainly viable, according to expert geriatric oncologists at *Memorial Sloan Kettering Cancer Center*.	According to the *H. Lee Moffitt Cancer Center*, treatment of older cancer patients frequently involves chemotherapy. The efficacy of chemotherapy for most tumors is not age dependent. Recently there have been claims made that doctors rarely prescribe cancer treatments like chemotherapy to older people because of a higher risk for health complications: this is false. Although various health complications sometimes accompany old age, more carefully crafted treatment plans are required. Complications and side effects seen in older adults are often related to managing multiple medications, but chemotherapy is certainly viable, according to expert geriatric oncologists at *Memorial Sloan Kettering Cancer Center*.
Microwaving plastic can release cancer-causing toxins into food	Historically, the public has been warned that microwaving plastic can release cancer-causing toxins into food: this is false. According to the *H. Lee Moffit Cancer Center and Research Institute*, there is no evidence for this claim.	Microwaving plastic containers is safe because plastics do not contain dioxins (cancer causing toxins). Rather, dioxins are created when plastics burn or melt. Historically, the public has been warned that microwaving plastic can release cancer-causing

	Microwaving plastic containers is safe because plastics do not contain dioxins (cancer causing toxins). Rather, dioxins are created when plastics burn or melt. According to epidemiologist Dr. Permuth, "If a container does not have a microwave-safe label, it isn't necessarily unsafe; the *FDA* just hasn't determined whether it is or not." Even so, avoiding containers that were never intended for the microwave, such as margarine tubs, is still a good idea.	toxins into food: this is false. According to the *H. Lee Moffit Cancer Center and Research Institute*, there is no evidence for this claim. According to epidemiologist Dr. Permuth, "If a container does not have a microwave-safe label, it isn't necessarily unsafe; the *FDA* just hasn't determined whether it is or not." Even so, avoiding containers that were never intended for the microwave, such as margarine tubs, is still a good idea.
Fluoride in water can increase your likelihood of developing cancer	Fluoride in water can increase your likelihood of developing cancer: this is false. The *National Cancer Institute* reports that there is no association between fluoride and cancer. Relationships between fluoridated water and cancer risk were debated for years, but in 1991 the *Public Health Service* report concluded that the fluoridation of drinking water is safe. They reviewed more than 50 populations over the past 40 years to establish this determination. Fluoride has been proven to protect teeth from decay as it helps to rebuild and strengthen the tooth's surface, and is safe to consume at the current regulated levels.	Relationships between fluoridated water and cancer risk were debated for years, but in 1991 the *Public Health Service* report concluded that the fluoridation of drinking water is safe. They reviewed more than 50 populations over the past 40 years to establish this determination. Fluoride in water can increase your likelihood of developing cancer: this is false. The *National Cancer Institute* reports that there is no association between fluoride and cancer. Fluoride has been proven to protect teeth from decay as it helps to rebuild and strengthen the tooth's surface, and is safe to consume at the current regulated levels.
Electromagnetic fields produced by	People often believe that the electromagnetic fields produced by microwaves can lead to cancer: this is false. According to the *National Cancer Institute*,	Microwaves are safe because electromagnetic frequencies are on the 'non-ionizing' part of the electromagnetic spectrum. They therefore cannot

microwaves can lead to cancer	microwaves produce only low to mid frequency electromagnetic fields. Microwaves are safe because electromagnetic frequencies are on the 'non-ionizing' part of the electromagnetic spectrum. They therefore cannot make changes or cause damage to human cells or DNA. Based on a recent in-depth review of the scientific literature, the WHO concluded that current evidence does not confirm the existence of any health consequences from exposure to low level electromagnetic fields, like those from microwaves.	make changes or cause damage to human cells or DNA. People often believe that the electromagnetic fields produced by microwaves can lead to cancer: this is false. According to the *National Cancer Institute*, microwaves produce only low to mid frequency electromagnetic fields. Based on a recent in-depth review of the scientific literature, the WHO concluded that current evidence does not confirm the existence of any health consequences from exposure to low level electromagnetic fields, like those from microwaves.

Table S5

Bottom-loaded affirmation and true truth sandwich affirmations for fact items

Fact Item	Bottom-loaded Affirmation	Truth Sandwich
Processed meats are associated with increased risk of cancer	The popular view is that processed meats, such as bacon, are associated with increased risk of cancer: this is true. According to the *Australian Cancer Council*, there are certain chemicals in red and processed meats (i.e. bacon, ham, hotdogs, chorizo) that cause these foods to be carcinogenic. The Council recommends consuming, at maximum, 455g per week of lean, cooked red meat. *The International Agency for Research on Cancer* found that the risk of developing bowel cancer increased 18% for every 50 grams (~2 oz) of processed meat eaten per day.	According to the *Australian Cancer Council*, there are certain chemicals in red and processed meats (i.e. bacon, ham, hotdogs, chorizo) that cause these foods to be carcinogenic. The Council recommends consuming, at maximum, 455g per week of lean, cooked red meat. The popular view is that processed meats, such as bacon, are associated with increased risk of cancer: this is true. *The International Agency for Research on Cancer* found that the risk of developing bowel cancer increased 18% for every 50 grams (~2 oz) of processed meat eaten per day.
Most people diagnosed with breast cancer have no known family history of the disease	It is sometimes reported that most people diagnosed with breast cancer have no known family history of the disease: this is true. A meta-analysis in the *International Journal of Cancer* found that only about 15 to 20% of women diagnosed with breast cancer report having a family history of the disease. Less than 10% have a known gene mutation that increases risk. Although having a family history of the disease may put a woman at higher risk for developing the	A meta-analysis in the *International Journal of Cancer* found that only about 15 to 20% of women diagnosed with breast cancer report having a family history of the disease. Less than 10% have a known gene mutation that increases risk. It is sometimes reported that most people diagnosed with breast cancer have no known family history of the disease: this is true. Although having a family history of the disease may put a woman at higher risk for developing the

	disease due to inherited genetic mutations, the *American Cancer Society* reports 90-95% of breast cancer cases do not involve these inherited mutations.	disease due to inherited genetic mutations, the *American Cancer Society* reports 90-95% of breast cancer cases do not involve these inherited mutations
Breast cancer is more common in the left breast than in the right	A common claim is that breast cancer is more common in the left breast than in the right: this is true. Data from the *Icelandic Cancer Registry* shows that 13% more breast cancers were observed in the left breast as opposed to the right. Epidemiological studies from the *National Cancer Institute* examining 881,000 thousand people found that left sided tumors were reported in 50.8% of people while right sided tumors occurred in 49.2% of people . This finding is consistent with the results of several previously published studies showing that unilateral breast cancer (i.e., tumors in one breast as opposed to both) is more common in the left breast than in the right.	Epidemiological studies from the *National Cancer Institute* examining 881,000 thousand people found that left sided tumors were reported in 50.8% of people while right sided tumors occurred in 49.2% of people . A common claim is that breast cancer is more common in the left breast than in the right: this is true. Data from the *Icelandic Cancer Registry* shows that 13% more breast cancers were observed in the left breast as opposed to the right. This finding is consistent with the results of several previously published studies showing that unilateral breast cancer (i.e., tumors in one breast as opposed to both) is more common in the left breast than in the right.
Naked mole rats don’t get cancer	Some people have said that naked mole rats don’t get cancer: this is true. Naked mole rats live for over 30 years—much longer than other rodents—without developing degenerative diseases. An article published in the journal *Science* reported that despite scientists having studied naked mole rat colonies for several years, not once has a naked mole rat with a tumor been observed.	An article published in the journal *Science* reported that despite scientists having studied naked mole rat colonies for several years, not once has a naked mole rat with a tumor been observed. Some people have said that naked mole rats don’t get cancer: this is true. Naked mole rats live for over 30 years—much longer than other rodents—without developing degenerative diseases.

	Research published in the journal *Nature* discovered that the reason they don't develop tumors is because of a complex sugar their cells produce that helps keep cells from clumping together.	Research published in the journal *Nature* discovered that the reason they don't develop tumors is because of a complex sugar their cells produce that helps keep cells from clumping together.
Some types of cancer are preventable with vaccination	One idea is that some types of cancer are preventable with vaccination: this is true. According to the CDC, certain cancers can develop as a result of viruses that remain in the body for too long. Vaccines are a good way to prevent cancer by ensuring the body will already have mounted an immune response against the cancer-causing virus. The vaccine will only work if a person gets the vaccine before they are infected with the cancer-causing virus. Two notable examples confirmed by the National Cancer Institute include the HPV (human papillomavirus) vaccine preventing cervical cancers, and the hepatitis B vaccine aiding in the prevention of liver cancer.	Vaccines are a good way to prevent cancer by ensuring the body will already have mounted an immune response against the cancer-causing virus. The vaccine will only work if a person gets the vaccine before they are infected with the cancer-causing virus. One idea is that some types of cancer are preventable with vaccination: this is true. According to the CDC, certain cancers can develop as a result of viruses that remain in the body for too long. Two notable examples confirmed by the National Cancer Institute include the HPV (human papillomavirus) vaccine preventing cervical cancers, and the hepatitis B vaccine aiding in the prevention of liver cancer.
Ancient Egyptians were the first to describe cancer	Some people posit that the ancient Egyptians were the first to describe cancer: this is true. Ancient Egyptians documented the condition, but it was considered incurable. According to a paper published in the peer-reviewed journal Breast, one of the earliest breast cancer case descriptions comes from an Egyptian	According to a paper published in the peer-reviewed journal Breast, one of the earliest breast cancer case descriptions comes from an Egyptian manuscript called "the Edwin Smith Papyrus" dating back to the Pyramid Age, 3000 BC. Some people posit that the ancient Egyptians were the first to describe cancer: this is true. Ancient

	manuscript called "the Edwin Smith Papyrus" dating back to the Pyramid Age, 3000 BC. “The Edwin Smith Papyrus" is often thought to be the oldest medical text, according to a paper published in the journal *Cancer*. The scroll is 4.68 meters or 15.3 feet in length, and describes 48 cases of injuries, fractures, wounds, dislocations and tumors, of which cancer is just one case.	Egyptians documented the condition, but it was considered incurable. “The Edwin Smith Papyrus" is often thought to be the oldest medical text, according to a paper published in the journal *Cancer*. The scroll is 4.68 meters or 15.3 feet in length, and describes 48 cases of injuries, fractures, wounds, dislocations and tumors, of which cancer is just one case.
The word cancer comes from the Latin for ‘crab’	It is often thought that the word cancer comes from the Latin for ‘crab’: this is true. It is possible that the finger-like spreading projections from a cancer called to mind the shape of a crab, according to Dr. Howard Markel, medical historian at *University of Michigan.* Some think that cancer was named after a crab because of the way a cancer adheres to any part that it seizes upon in an obstinate manner, like the crab does with its claws. According to the *American Cancer Society*, the “Father of Medicine " Hippocrates was the first to use the Greek word for crab, carcinoma to describe ulcer-forming tumors. The Roman physician, Celsus (28-50 BC), later translated the Greek term into cancer, the Latin word for crab.	Some think that cancer was named after a crab because of the way a cancer adheres to any part that it seizes upon in an obstinate manner, like the crab does with its claws. It is often thought that the word cancer comes from the Latin for ‘crab’: this is true. It is possible that the finger-like spreading projections from a cancer called to mind the shape of a crab, according to Dr. Howard Markel, medical historian at *University of Michigan.* According to the *American Cancer Society*, the “Father of Medicine " Hippocrates was the first to use the Greek word for crab, carcinoma to describe ulcer-forming tumors. The Roman physician, Celsus (28-50 BC), later translated the Greek term into cancer, the Latin word for crab.
In the U.S., the overall cancer mortality rate has	The claim has been made that in the U.S., the overall cancer mortality rate has declined since the 1990s: this is true. According to the CDC, in	According to a 2020 report published in the journal CA: A Cancer Journal for Clinicians, the cancer death rate was on the rise until 1991, and then fell

declined since the 1990s	the past 20 years, cancer death rates went down by 27%. According to a 2020 report published in the journal CA: A Cancer Journal for Clinicians, the cancer death rate was on the rise until 1991, and then fell continuously through 2017. Additional studies show a continuing decline through 2020. The overall decline over this time period is estimated at approximately 3 million fewer cancer deaths than if peak rates of mortality were sustained. This is likely due to advancements in research and treatments.	continuously through 2017. Additional studies show a continuing decline through 2020. The claim has been made that in the U.S., the overall cancer mortality rate has declined since the 1990s: this is true. According to the CDC, in the past 20 years, cancer death rates went down by 27%. The overall decline over this time period is estimated at approximately 3 million fewer cancer deaths than if peak rates of mortality were sustained. This is likely due to advancements in research and treatments.
Dogs can smell cancer	Some people say that dogs can smell cancer: this is true. 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, according to studies published in the *British Medical Journal (BMJ)*. Dogs' powerful noses have the ability to smell cancer because they have 300 million sensors, compared with a human's measly 5 million. In addition, dogs have a second smelling organ that we don't have, called Jacobson's organ. Researchers from the *Pine Street Foundation in California* conducted a study where dogs correctly detected cancer in 99% of lung cancer patients.	Dogs' powerful noses have the ability to smell cancer because they have 300 million sensors, compared with a human's measly 5 million. In addition, dogs have a second smelling organ that we don't have, called Jacobson's organ. Some people say that dogs can smell cancer: this is true. 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, according to studies published in the *British Medical Journal (BMJ)*. Researchers from the *Pine Street Foundation in 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.	Only 1% of the time did they mistakenly assume that healthy people had cancer.
Increased duration and increased exposure to ovarian hormones (estrogen and progesterone) have been associated with higher breast cancer risk	It has been said that increased duration and increased exposure to ovarian hormones (estrogen and progesterone) have been associated with higher breast cancer risk: this is true, as reported by the *American Cancer Society*. According to the *National Cancer Institute*, the duration and amount of estrogen and progesterone that women are exposed to can stimulate cell growth, which can lead to the development of breast cancer. Pregnancy and breastfeeding, both of which reduce cumulative exposure to endogenous estrogen and progesterone, are associated with a decreased breast cancer risk.	According to the *National Cancer Institute*, the duration and amount of estrogen and progesterone that women are exposed to can stimulate cell growth, which can lead to the development of breast cancer. It has been said that increased duration and increased exposure to ovarian hormones (estrogen and progesterone) have been associated with higher breast cancer risk: this is true, as reported by the *American Cancer Society*. Pregnancy and breastfeeding, both of which reduce cumulative exposure to endogenous estrogen and progesterone, are associated with a decreased breast cancer risk.
Approximately 40% of people will be diagnosed with cancer during their lifetimes	Some reports suggest that approximately 40% of people will be diagnosed with cancer during their lifetimes: this is true, according to *The National Cancer Institute.* Cancer diagnoses are unfortunately relatively common. On average, the risks are high (40%), but each person may have a higher or lower overall risk depending on unique genetic and environmental factors. Data collected between 2015-2017 by the *National Cancer Institute* shows that approximately 4 in 10	Cancer diagnoses are unfortunately relatively common. On average, the risks are high (40%), but each person may have a higher or lower overall risk depending on unique genetic and environmental factors. Some reports suggest that approximately 40% of people will be diagnosed with cancer during their lifetimes: this is true, according to *The National Cancer Institute.* Data collected between 2015-2017 by the *National Cancer Institute* shows that approximately 4 in 10

	people will be diagnosed with cancer at some point during their life. Thankfully, mortality rates are continuously decreasing thanks to new technologies and research.	people will be diagnosed with cancer at some point during their life. Thankfully, mortality rates are continuously decreasing thanks to new technologies and research.
The Chernobyl accident alone was predicted to have caused 5000 cancer cases	The Chernobyl accident alone was predicted to have caused 5000 cancer cases: this is true, according to *The United Nations Scientific Committee on the Effects of Atomic Radiation*. The good news is that most of these cases were treated and cured. A 2006 study published in the peer-reviewed journal *International Journal of Cancer* estimates that 1000 cases of thyroid cancer and 4000 cases of various other cancers are attributable to the Chernobyl accident. Authorities failed to prevent contaminated milk from being sold in the region; many who were children at the time drank it, receiving large doses of radioactive iodine. This iodine was one of the contaminants blasted out of the reactor.	A 2006 study published in the peer-reviewed journal *International Journal of Cancer* estimates that 1000 cases of thyroid cancer and 4000 cases of various other cancers are attributable to the Chernobyl accident. The Chernobyl accident alone was predicted to have caused 5000 cancer cases: this is true, according to *The United Nations Scientific Committee on the Effects of Atomic Radiation*. The good news is that most of these cases were treated and cured. Authorities failed to prevent contaminated milk from being sold in the region; many who were children at the time drank it, receiving large doses of radioactive iodine. This iodine was one of the contaminants blasted out of the reactor.

Inference Questions

1. Should disproportionately more funding be allocated to cancers that are linked to inherited faulty genes than to other kinds of cancers?
2. How likely are you to drink red wine due to its cancer preventing properties?
3. If a relative had cancer, how strongly would you recommend that they avoid eating sugar?
4. If you were a doctor, how likely would you be to recommend avoiding chemotherapy to older adults?
5. How likely are you to avoid microwaving FDA approved plastic due to the cancer-causing toxins it releases?
6. Do you think there should be reduced breast cancer testing for people without a history of the disease?
7. Do you think there should be more research into why there is more breast cancer in the left breast than the right breast?
8. Do you agree that "ancient Egyptians were the first to describe cancer" is a fact that could be taught in schools?
9. Do you agree that "the word for cancer comes from the Latin for crab" is a fact that could be taught in schools?
10. Do you agree that decline in cancer rates over the last 20 years is a fact that could be taught in health programs?
11. How likely are you to recommend people avoid prolonged or unnecessary exposure to ovarian hormones due to their association with cancer risk?
12. Do you agree that more funding should be allocated to cancer research given it is a common diagnosis across the population?
13. Do you agree that "the Chernobyl accident caused 5000 cancer cases" is a fact that could be taught in schools?

14. In the future, how likely are you to avoid the following due to their cancer causing properties? (0 = extremely unlikely; 10 = extremely likely)
    i. Artificial Sweeteners
    ii. Antiperspirants that contain aluminum
    iii. Moving to a polluted city
    iv. Fluoride in water
    v. Stress
    vi. Electromagnetic fields produced by microwave
    vii. Eating processed meats

15. Do you agree that there should be more funding allocated to investigating the below? (0 = strongly disagree; 10 = strongly agree)
    i. Vaccines that prevent cancer

ii. Dogs' ability to smell cancer
iii. Sharks and their cancer fighting properties
iv. Naked mole rats and their resistance to cancer

Supplement D: Correction format effectiveness in top tertile of CAMBI-NH scores

As per the pre-registration, we reran all analyses isolated to participants who endorsed complementary and alternative medicines, assessed using the CAMBI, to determine if this subgroup would benefit from the truth sandwich in comparison to a bottom-loaded refutation format. As per prior research (Swire-Thompson et al. 2024), we excluded the participation in holistic treatment subscale of the CAMBI. This exclusion was made because it did not correlate with pre-test misinformation belief (Experiment 1: $p = .420$; Experiment 2: $p = .353$) whereas holistic health and natural health subscales did (all ps < .001), creating a new subscale which we call the CAMBI-NH. The below analyses are isolated to participants whose CAMBI-NH scores fell in the top tertile (Experiment 1: $N = 192$; Experiment 2: $N = 110$ in immediate condition; $N = 79$ in delayed condition [189 total]).

Experiment 1

Belief in Misinformation

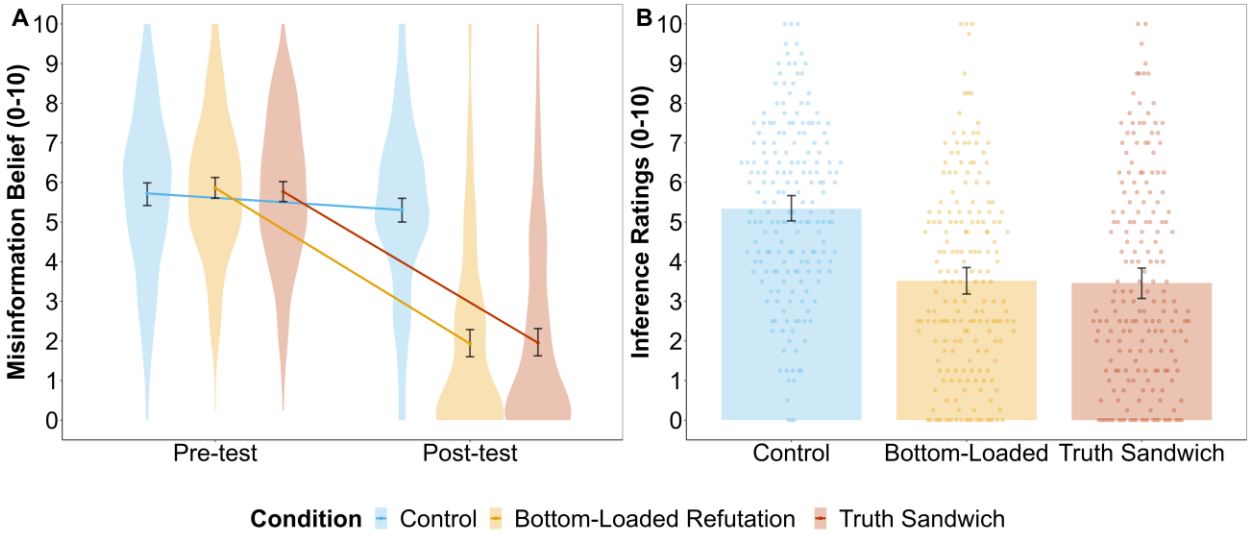
To assess the impact of the correction format on belief in misinformation for participants scoring in the top CAMBI-NH tertile, we ran a 2 × 3 within-subjects ANOVA with within-subjects factors pre/post (pre vs. post-test) and correction condition (no-correction control vs. bottom-loaded refutation vs. truth sandwich). There was a significant pre/post interaction × correction condition, $F(1.93, 368.60) = 190.27$, $p < .001$, $MSE = 2.08$, $\eta_p^2 = 0.50$, showing that the efficacy of belief reduction depended on the condition (see Figure S1, panel A for descriptives). Both the truth sandwich and bottom-loaded refutation reduced belief in false-claims in comparison to the control, $t(191) = 15.91$, $p < .001$; $t(191) = 15.31$, $p < .001$ respectively. However, there was no difference in belief between the truth sandwich and bottom-loaded correction conditions ($p = .983$). Furthermore, rerunning the ANOVA excluding the no-correction control returned a non-significant main effect of correction condition, $F(1, 191) = 0.09$; $p = .766$, $MSE = 2.57$, $\eta_p^2 < 0.01$, and non-significant pre/post × correction condition interaction, $F(1, 191) = 0.40$, $p = .530$, $MSE = 1.63$, $\eta_p^2 < 0.01$. This was confirmed with a 2 × 2 within-subjects Bayesian ANOVA which provided strong evidence for a null effect of correction condition ($BF_{01} = 12.52$), and moderate evidence for the null for a pre/post × correction condition interaction ($BF_{01} = 8.74$). A paired sample t-test with the hypothesis that the truth sandwich would have lower post-correction belief than the bottom-loaded refutation showed strong support for the null ($BF_{0-} = 14.20$).

Inference Ratings

To assess the effect of correction condition (control vs. bottom-loaded refutation vs. truth sandwich) on inference ratings, we ran a 3-way within-subjects ANOVA (see Figure S1, panel B for descriptives). There was a significant effect of condition, $F(1.93, 368.81) = 66.22$, $p < .001$, $MSE = 3.42$, $\eta_p^2 = 0.26$. Reliance on misinformation in both the truth sandwich and bottom-loaded refutation conditions were lower than in the control, $t(191) = 9.59$, $p < .001$; $t(191) = 9.50$, $p < .001$ respectively, but there were no differences between the correction conditions ($p = .935$). This was again confirmed with a Bayesian paired sample t-test, with the hypothesis that the truth sandwich would be associated with lower reliance on misinformation than the refutation showing moderate evidence for the null ($BF_{0+} = 9.19$).

Figure S1

Results isolated to participants in the top tertile of CAMBI-NH scores for (a) Belief in misinformation across correction conditions pre- and post-test (b) Inference ratings across conditions.



Note. All error bars represent 95% confidence intervals; Violins and jitter provide distributional information.

Experiment 2

Belief in Misinformation

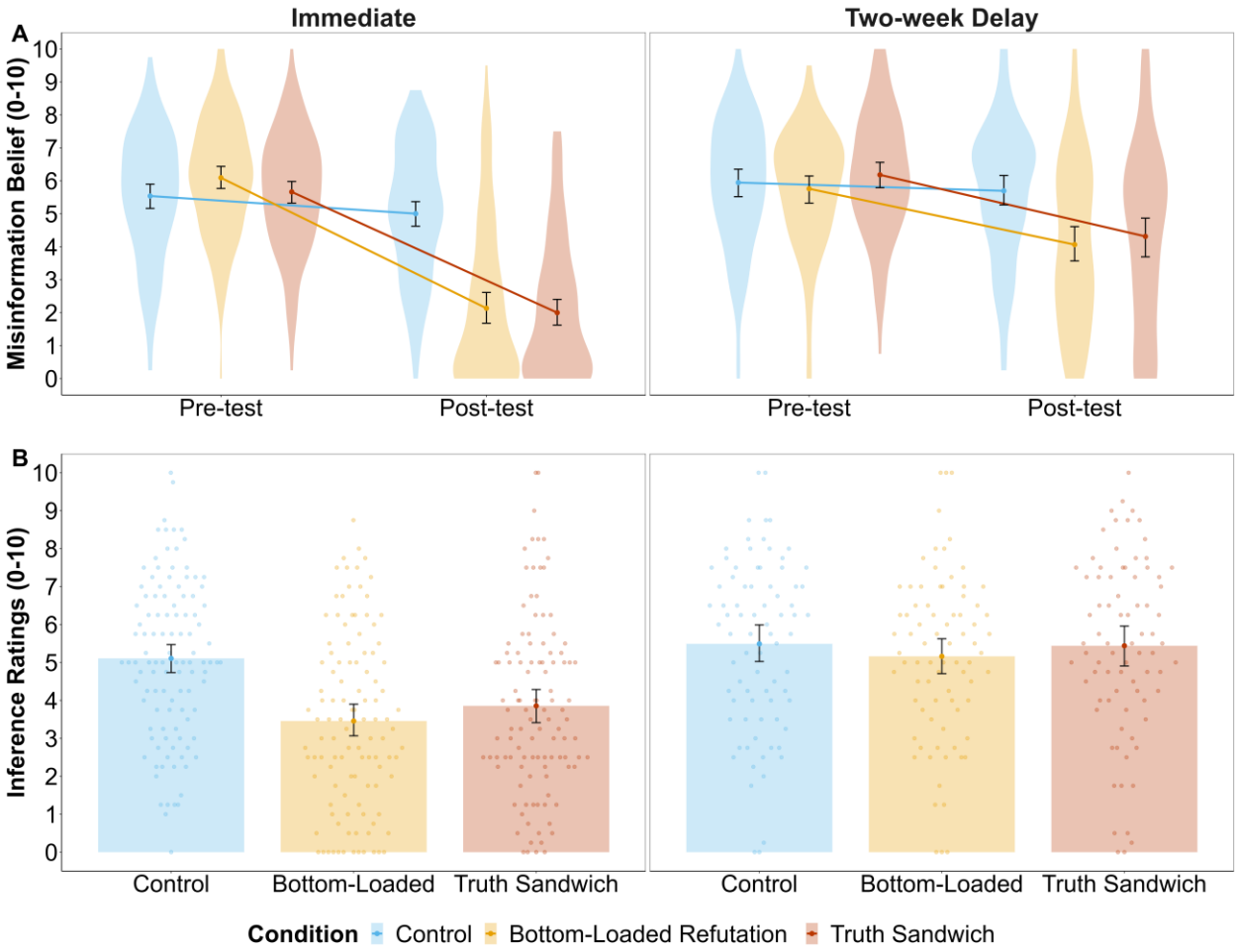
We first assessed the difference in belief updating across conditions and retention interval for participants scoring in the top CAMBI-NH tertile. We conducted a 2 × 2 × 3 between-within-subjects ANOVA with between-subjects factor retention group (immediate vs. two-week delayed) and within-subjects factors correction condition (truth sandwich vs. bottom-loaded refutation vs. no correction control) and pre/post (pre vs. post-test). There was a significant three-way interaction, $F(1.98, 370.93) = 12.65$, $p < .001$, $MSE = 1.96$, $\eta_p^2 = .06$, showing that the impact of condition on belief reduction varied across retention groups (see Figure S2, panel A for descriptives). Both the truth sandwich and bottom-loaded refutation reduced belief compared to the control in the immediate, $t(187) = 11.33$, $p < .001$; $t(187) = 11.23$, $p < .001$, and in the two-week delay condition, $t(187) = 4.42$, $p = .001$; $t(187) = 5.41$, $p < .001$ respectively[1]. There was no difference in belief between the truth sandwich and bottom-loaded conditions in either the immediate or delayed retention groups ($ps \geq .997$). Indeed, rerunning the ANOVA excluding the no-correction control (i.e., a 2 × 2 × 2 between-within subjects) returned a non-significant three-way interaction, $F(1, 187) = 1.33$, $p = .250$, $MSE = 1.86$, $\eta_p^2 = .01$.

[1] In the immediate condition there was a spurious difference in pre-fact-check belief between the control and bottom-loaded refutation conditions, $t(187) = -2.75$, $p = .018$, in the opposite direct to post-correction belief (i.e., belief in the control condition was significantly lower than in the bottom-loaded refutation condition).

We also ran a 2 × 2 × 2 between-within subjects Bayesian ANOVA isolated to the correction conditions (i.e., excluding the no-correction control condition). The Bayesian ANOVA provided strong evidence for the null effect of condition (BF_{01} = 12.30), and moderate evidence for the null for the three-way interaction (BF_{01} = 8.41). Furthermore, paired sample t tests with the hypothesis that the truth sandwich would have reduced belief (compared to the bottom-loaded refutation) also showed moderate support for the null in the immediate retention group (BF_{0-} = 4.82), and strong support for the null in the delay retention group (BF_{0-} = 14.70).

Figure S2

Results isolated to participants in the top tertile of CAMBI-NH scores for (a) Belief in misinformation across correction conditions pre- and post-test (b) Inference ratings across conditions. Left panels show the immediate time points and right panels show results after a 2-week delay.



Note. All error bars represent 95% confidence intervals; Violins and jitter provide distributional information.

Inference Ratings

We conducted a 2 × 3 between-within subjects ANOVA on inference ratings to determine if there was a significant effect of correction condition on reliance on misinformation

either immediately or after a two-week delay (see Figure S2, panel B). There was a significant interaction of correction condition and retention group, $F(1.91, 357.40) = 8.77$, $p < .001$, $MSE = 2.92$, $\eta_p^2 = .05$ showing that the impact of the corrections differed over time. Follow up contrasts revealed that both the truth sandwich and bottom-loaded refutation conditions were associated with reduced reliance on misinformation as compared to the control in the immediate retention interval group, $t(187) = 5.06$, $p < .001$; $t(187) = 8.04$, $p < .001$; respectively. However, these differences were non-significant in the delay interval group ($ps \geq .752$). There was no significant difference between reliance on misinformation in the truth sandwich and bottom-loaded refutation conditions for either retention interval (all $ps \geq .322$). This null effect was confirmed with Bayesian paired sample t-tests, with the hypothesis that the truth sandwich would result in reduced reliance on misinformation showing strong support for the null in both the immediate ($BF_{0-} = 25.35$) and delay groups ($BF_{0-} = 15.70$).

Supplement E: Results for True Items

True items

For completeness, belief in true claims was examined. Results are briefly described below, and provided in full in the RMarkdown. Note that given all information presented is true, "truth sandwich" is technically a misnomer here. However, we refer to these affirmations as "true truth sandwiches" to maintain consistent framing with the main text.

Experiment 1

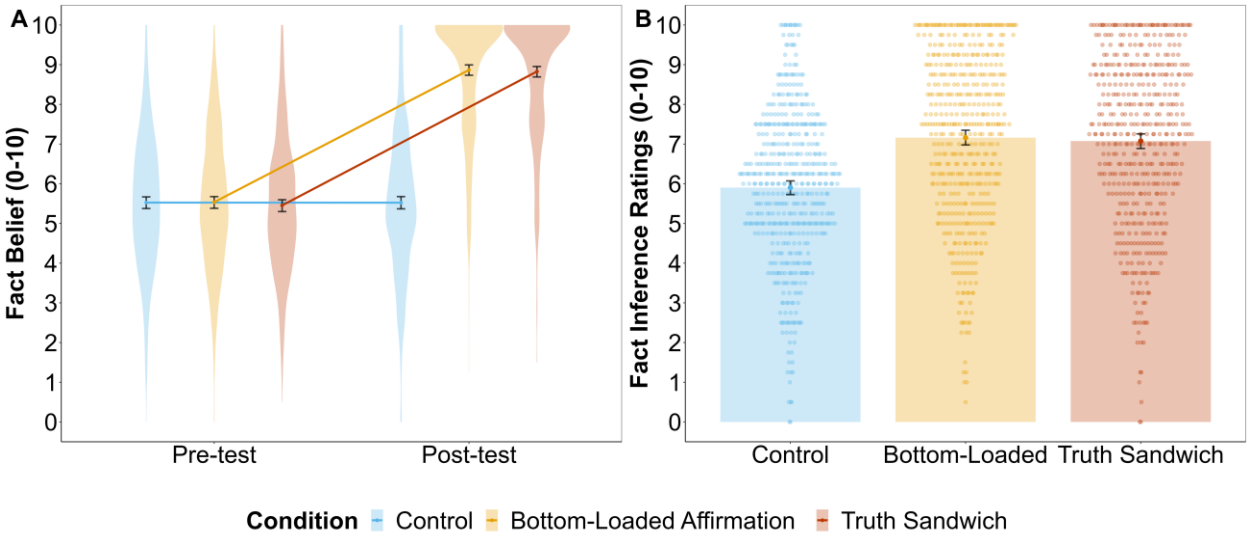
Belief in true claims

Average belief across affirmation conditions is displayed in Figure S3 panel A. We conducted a 2 (pre/post) × 3 (affirmation condition: no-affirmation control vs. bottom-loaded affirmation vs. true truth sandwich) within-subjects ANOVA on belief in true claims. This analysis returned a significant pre/post × affirmation condition interaction, $F(1.98, 1019.58) = 669.93$; $p < .001$, $MSE = 1.46$, $\eta_p^2 = 0.57$, showing that belief increase depended on the condition. Compared to the control, both the bottom-loaded affirmation and true truth sandwich increased true-claim belief, $t(516) = 31.07$, $p < .001$; $t(516) = 30.81$, $p < .001$ respectively, however, there was no difference in belief across the two affirmation conditions ($p = .986$).

Given that we hypothesized a null, we additionally assessed affirmation condition effectiveness using a 2 × 2 within-subjects Bayesian ANOVA (excluding the no-affirmation condition). This analysis showed strong evidence for a null effect of affirmation condition ($BF_{01} = 17.62$) and pre/post × affirmation condition interaction ($BF_{01} = 13.77$). Repeating the above analyses specifically with participants who endorsed complementary and alternative medicines (i.e., high CAMBI-NH) resulted in an equivalent pattern of results.

Figure S3

(a) Belief in true information across conditions and pre- and post-test (b) Inference ratings across conditions.



Note. All error bars represent 95% confidence intervals; Violins and jitter provide distributional information.

Inference Scores

Average inference scores across affirmation conditions are provided in Figure S3 panel B. A one-way ANOVA revealed a significant effect of affirmation condition, $F(2.00, 1031.38) = 62.90$; $p < .001$, $MSE = 4.06$, $\eta_p^2 = .11$, with inference ratings in both the bottom-loaded and true truth sandwich condition higher than in the control, $t(516) = 9.99$, $p < .001$; $t(516) = 9.47$, $p < .001$, respectively. There was no difference in inference scores between affirmation conditions ($p = .779$). This was confirmed with a Bayesian ANOVA, providing strong evidence for the null effect of the affirmation condition ($BF_{01} = 17.44$). Repeating the above analyses isolated to participants who endorsed complementary and alternative medicines (i.e., high CAMBI-NH) returned an equivalent pattern of results.

Experiment 2

Belief in true claims

Average belief across affirmation conditions and retention intervals is displayed in Figure S4 panel A. A 2 (retention group: immediate vs. delayed) × 2 (pre/post) × 3 (affirmation condition: true truth sandwich vs. bottom-loaded affirmation vs. no affirmation control) between-within-subjects ANOVA returned a significant three-way interaction, $F(1.99, 1049.32) = 30.47$, $p < .001$, $MSE = 1.46$, $\eta_p^2 = .06$. Belief in true claims was significantly lower in the delayed condition than in the immediate condition (reflecting belief regression) for both the bottom-loaded and true truth sandwich conditions, $t(527) = -8.28$, $p < .001$; $t(527) = -7.28$, $p < .001$ respectively. Despite their reduced efficacy over time, both the bottom-loaded and true truth sandwich conditions increased belief as compared to the control both immediately, $t(527) = 21.68$, $p < .001$; $t(527) = 21.32$, $p < .001$, and after the two-week delay, $t(527) = 10.18$, $p < .001$; $t(527) = 10.59$, $p < .001$. There was no difference in belief between affirmation conditions for either retention interval ($ps \geq .895$). Furthermore, excluding the control condition from analyses (i.e., a 2 × 2 × 2 between-within subjects ANOVA) returned no main effect of affirmation condition (bottom-loaded vs. true truth sandwich; $p = .888$), pre/post × affirmation condition interaction ($p = .961$), or three-way interaction ($p = .201$). Conducting the 2 × 2 × 2 analysis as a Bayesian ANOVA provided strong evidence for a null effect of condition ($BF_{01} = 20.71$), and moderate evidence for the null for the three-way interaction ($BF_{01} = 5.58$). Repeating the above analyses isolated to participants who endorsed complementary and alternative medicines (i.e., high CAMBI-NH) returned an equivalent pattern of results.

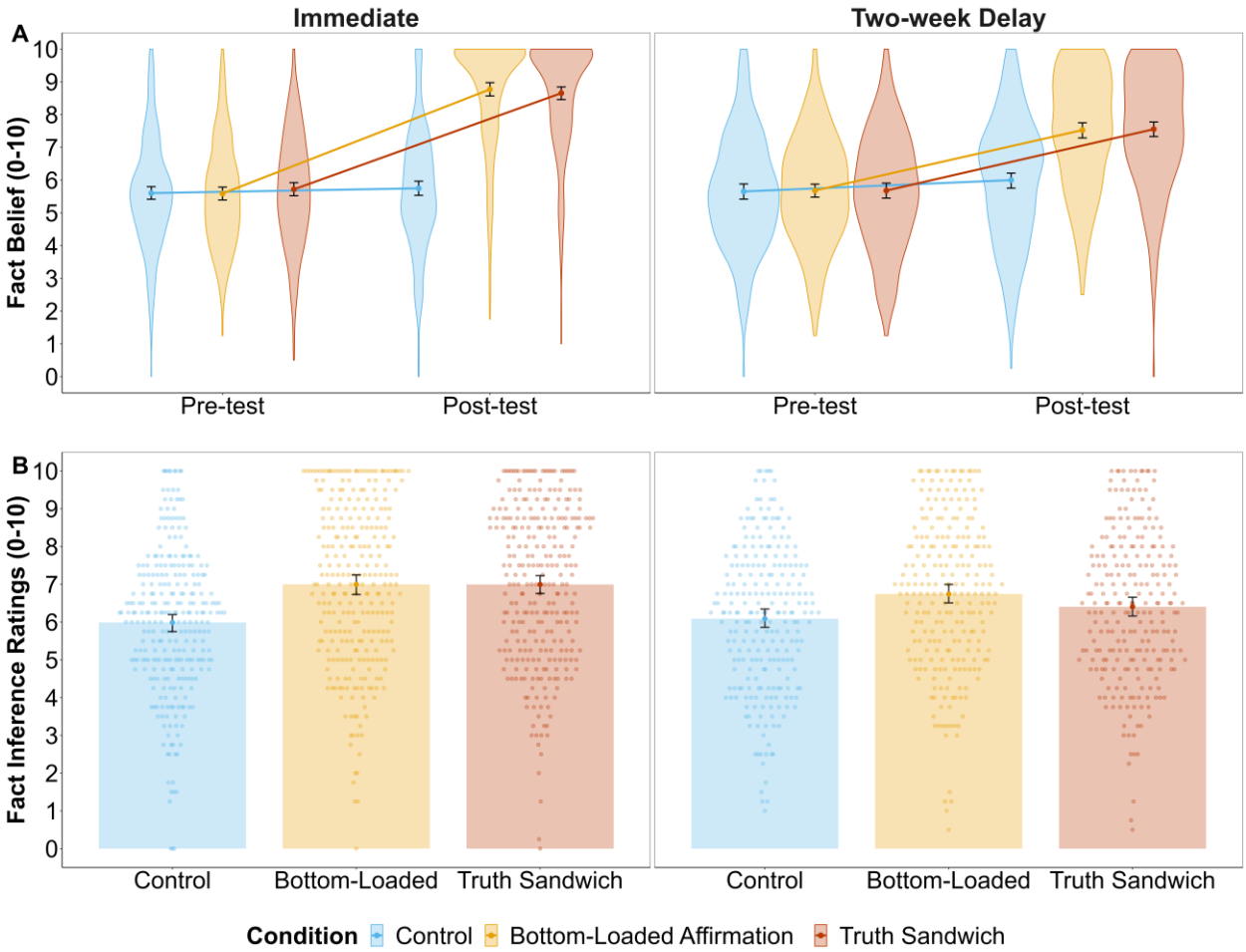
Inference Scores

A 2 (retention interval) × 3 (affirmation condition) between-within subjects ANOVA on inference ratings returned a significant interaction, $F(1.99, 1048.30) = 3.99$, $p = .020$, $MSE = 3.99$, $\eta_p^2 < .01$ (see Figure S4, panel B). The true truth sandwich condition was significantly less effective after the delay, $t(527) = 3.31$, $p = .013$, however the effectiveness of the bottom-loaded affirmation did not significantly differ across retention intervals ($p = .733$). Inference scores in both the bottom-loaded and true truth sandwich conditions were significantly higher immediately, $t(527) = 5.90$, $p < .001$; $t(527) = 6.26$, $p < .001$. In the delayed condition, inference scores were significantly higher in the bottom-loaded condition than control, $t(527) = 3.56$, $p = .005$, but true truth sandwich condition was equivalent to control ($p = .442$). However, it is important to note that for both retention intervals there were no significant differences across the two affirmation conditions ($ps \geq .432$). Furthermore, repeating the analysis isolated to only

the two affirmation conditions (i.e., a 2 × 2 ANOVA) returned no main effect of affirmation condition (bottom-loaded vs. true truth sandwich; $p = .172$), or retention interval × affirmation condition interaction ($p = .178$). Rerunning this 2 × 2 analysis as a Bayesian ANOVA additionally returned moderate evidence for both a null effect of condition ($BF_{01} = 6.18$) and the retention interval × affirmation condition interaction ($BF_{01} = 4.00$). Repeating the above analyses isolated to participants who endorsed complementary and alternative medicines (i.e., high CAMBI-NH) returned an equivalent pattern of results.

Figure S4

(a) Belief in true information across affirmation conditions and pre- and post-test and (b) Inference ratings across conditions. Left panels show the immediate time points and right panels show results after a 2-week delay.



Note. Error bars represent 95% confidence intervals; Violins and jitter provide distributional information.