A scientific theory of gist communication and misinformation resistance, with implications for health, education, and policy

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A framework is presented for understanding how misinformation shapes decision-making, which has cognitive representations of gist at its core. I discuss how the framework goes beyond prior work, and how it can be implemented so that valid scientific messages are more likely to be effective, remembered, and shared through social media, while misinformation is resisted. The distinction between mental representations of the rote facts of a message—its verbatim representation—and its gist explains several paradoxes, including the frequent disconnect between knowing facts and, yet, making decisions that seem contrary to those facts. Decision makers can falsely remember the gist as seen or heard even when they remember verbatim facts. Indeed, misinformation can be more compelling than information when it provides an interpretation of reality that makes better sense than the facts. Consequently, for many issues, scientific information and misinformation are in a battle for the gist. A fuzzy-processing preference for simple gist explains expectations for antibiotics, the spread of misinformation about vaccination, and responses to messages about global warming, nuclear proliferation, and natural disasters. The gist, which reflects knowledge and experience, induces emotions and brings to mind social values. However, changing mental representations is not sufficient by itself; gist representations must be connected to values. The policy choice is not simply between constraining behavior or persuasion—there is another option. Science communication needs to shift from an emphasis on disseminating rote facts to achieving insight, retaining its integrity but without shying away from emotions and values.

fuzzy-trace theory | gist | misinformation | science communication | emotion

Scientific information has tremendous potential to benefit individuals and societies. In the words of Thomas Jefferson (1), "Advancing the minds of our youth with the growing science of the times. . .may ensure to our country the reputation, the safety and prosperity, and all the other blessings which experience proves to result from the cultivation and improvement of the general mind."

Conversely, misinformation can harm personal and public welfare. For example, misinformation that "vaccinations cause autism" has undermined decisions about childhood vaccinations (2). To be sure, scientific information is not sufficient to make personal or public policy decisions, but it allows decision makers to pursue actions that reflect their values; it provides an epistemic safety net for people's choices.

In this connection, I build on the accomplishments of the Science of Science Communication workshops and publications (e.g., ref. 3), but offer an alternative framework for understanding how misinformation shapes decision-making. This framework has cognitive representations of the gist of information at its core. Here, I describe that framework, how it goes beyond prior work, and how it can be implemented so that valid scientific messages are more likely to be effective, remembered, and shared through social media, while misinformation is resisted.

Framework: Multiple Traces of Information in the Mind

In the following, I describe the tenets of fuzzy-trace theory (FTT) and its central concept of gist. "Gist" representations capture the essence of information, its bottom-line meaning in context, as opposed to "verbatim" details, such as exact words or numbers. FTT's ideas about verbatim and gist representations differ in important ways from prior theories (e.g., ref. 4). Among these differences, FTT holds that verbatim and gist representations operate independently when people encode, store, and retrieve information. This independence assumption, supported by extensive evidence, explains a host of paradoxes in information processing, ranging from false memories to faulty decision-making (5, 6).

For example, when a doctor says to a parent that unvaccinated children are 23 times more likely to get a disease compared to vaccinated children, verbatim memory for the phrase "23 times more likely" fades exponentially within minutes, but the gist that the difference is "huge" endures and is more likely to shape decisions (7). The doctor's words are a stimulus that the parent must perceive and process to have any effect on the parent's decision to vaccinate. That stimulus is processed in several ways at once: It is taken into the mind as a meaningless verbatim representation and as multiple meaningful gist representations that vary in abstraction. (Verbatim and gist representations are symbolic representations of the stimulus, not the stimulus itself.) Processing the gist, a highly numerate parent might wonder whether "23 times more likely" means that the difference is nil (a difference between two tiny probabilities) or huge. Deriving gist representations involves all of the factors that science has shown influence comprehension and inference, which FTT draws on—what a person knows about numbers, vaccination, the trustworthiness of doctors, and so on. The gist of a message is inherently vague—what exactly is a large or small difference? Nevertheless, the parent must extract the gist of this difference to make an informed choice about vaccination.

Tasks such as recognition and recall allow researchers to peek inside the mind and see what people have mentally represented

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from presented messages. Tasks such as probability judgment and decision-making allow researchers to understand how those representations of messages are used. To illustrate, research on recognition has shown that answering a question such as did the doctor say "unvaccinated children are 23 times more likely to get the disease" is stochastically independent of answering a question such as did the doctor say "unvaccinated children are much more likely to get the disease." If the recognition test is given right away, most people recognize the exact words that were spoken. Some also "falsely" recognize phrases that express the meaning of what was said—they vividly remember the gist as having been spoken. As long as the vague, essential meaning (from the listener's perspective) is preserved, human beings have a bias to think they heard what was meant.

However, contrary to classic theories of language processing, the probabilities of saying "yes" to both presented phrases and gist phrases on a recognition test are independent of one another after a short delay (i.e., a few minutes filled with a distraction between stimulus presentation and test). This result occurs because different mental representations are used to answer each question: Verbatim representations are cued for presented information and gist representations are cued for gist-consistent (but unpresented) information. Hence, the basis for saying "yes" to these two phrases differs. Knowledge influences the gist representations that are formed and that are falsely recognized. A parent who knows that mercury would kill a live virus, and that oral polio contains a live virus, is less likely to misremember a doctor saying that the oral polio vaccine contains mercury.

Furthermore, theoretically inspired manipulations can make recognition of presented and gist information negatively dependent or positively dependent by varying the accessibility of verbatim and gist mental representations (8). When there is no distraction between presentation of information and an immediate recognition test, people can often reject gist information as not presented, saying "no" to the extent that they remember the exact words that were presented (i.e., they use verbatim memory to both accept presented wording and reject unpresented wording). When delays are long, recognition of both presented and gist-consistent information becomes positively dependent: The better the gist is remembered, the more likely people are to say yes to either type of information.

These results—independence, negative dependence, and positive dependence under theoretically prescribed conditions—support FTT's tenets about distinct verbatim and gist representations. Mathematical models of FTT's psychological mechanisms make it possible to measure these dual processes of verbatim and gist separately (and to test single and double dissociations), rather than treating them as two poles of a single dimension of reasoning, as standard dual-process models do.

FTT also predicts surprising results called "developmental reversals" in which children outperform adults, a reversal of usual expectations. Since the discovery of this effect based on FTT, at least 53 of 55 experiments on "false" memories showed that gist-based inaccurate responses on memory tests grow steadily from early childhood to adulthood (controlling for the familiarity of to-be-remembered content). Children remember less, but they are more faithful recorders of experience than adults are. Counterintuitive reversals across age were originally demonstrated in FTT's research on judgment-and-decision biases in children and adolescents. Like memory illusions, these biases become stronger with development. Growing up, and acquiring knowledge and experience, all contribute to becoming more cognitively biased, less likely to treat objectively identical stimuli as identical when the context differs. This developmental pattern, too, is predicted by the growth of reliance on gist rather than on verbatim (literal) representations of information (9).

The direction of these developmental differences in multiple domains—toward gist rather than away from it—is one of the arguments favoring the conclusion that gist-based processing represents advanced cognition. Another argument is that processing meaning, and all that enables such as abstract problem solving and decision-making, is more advanced than relying on rote representations of reality (10). Yet another argument is that specific maladaptive patterns of behavior are associated with low levels of gist processing (although this reduces gist-based false memories and biases, e.g., in autism; ref. 11).

Crucially, gist representations of information influence judgments and decisions more than verbatim representations even when verbatim information can be remembered or is physically present. Knowing that the imminent chance of a tsunami is 15% drives the decision to seek higher ground because the gist is perceived as "high"; knowing that the imminent chance of a wave is 15% drives the surfer to pack it in for the day because the gist of that same 15% is perceived as low. Interpretations of both the probability and the magnitude of the consequences combine to form an overall impression of the gist of risk.

Reminders can reinstate memory for details of presented information, but the gist interpretation can be completely wrong while the verbatim memory is exactly right, and vice versa. For example, people might remember being told that "Arctic sea ice has been decreasing over the last three decades" and "Sea ice is melting" but falsely remember that they were explicitly told that "Arctic sea ice is decreasing due to global warming." That is, they were told that sea ice was melting but were not told that this is due to global warming. Instead, they believe that it is due to global warming, and so have a false memory that they were told this. People can come to believe that they remember seeing or hearing "facts" based on their subjective interpretation of events or information, a kind of self-inflicted misinformation reflected in their gist representations. This kind of "deep fake" is not based on technological wizardry but instead is self-generated routinely. For example, people could wrongly infer from the information above that they were told that "Antarctic sea ice has been steadily decreasing over the last three decades." In fact, Antarctic sea ice has increased through much of this period (although it has recently decreased dramatically; ref. 12). The impact of other-inflicted misinformation depends, like self-inflicted misinformation, on how recipients understand the gist of facts, for instance, whether a 9% annual rate of polar melting is interpreted as large or small. If large, that is alarming and calls for action. If small, it can be safely ignored.

Hence, a key difference between FTT and prior approaches is that it distinguishes between mental representations of the literal facts of a message—its verbatim representation—from those of the gist of the message. Decision-making is based primarily on gist representations that are separate from verbatim representations of the same facts, called the "fuzzy-processing preference" in FTT. This distinction explains the frequent disconnect between knowing the facts—or being presented with the facts—and, yet, making decisions that seem contrary to those facts. Misinformation can be more compelling than information when it provides an interpretation of reality that makes better sense than the facts.

Government web sites, for example, often present information without suggesting how to interpret that information for fear of being perceived as persuasive rather than informative (see discussion below). In addition, such sites truthfully convey that causes of some diseases (e.g., autism, narcolepsy, multiple sclerosis) are unknown, leaving a meaning vacuum that is then filled with coherent "explanations" that connect the dots but contradict science. Misinformation is compelling when it explains why; the claim that "vaccines cause autism" explains why autism appears around the same time as vaccinations and why the number of vaccinations and number of diagnoses are both rising. Concepts such as "overloading the immune system with too many vaccines" also seem plausible when people do not deeply

understand the immune system. Reciting poorly understood facts from science class or blindly relying on the authority of experts does not provide the public with insight into the gist. Knowing scientific facts is essential, but merely memorizing them without understanding falls short of getting the gist. The challenge is not to oversimplify the facts, but, rather, to distill the deepest insights of the best experts for the lay public.

Thus, the most important implication of the independence assumption for science communication is that the gist of a message determines what is remembered, decided, and shared through social media—not the verbatim message itself. The mental representation of the gist is not derived from the verbatim representation as most theories assume: Ask people what the gist of a message is and their answers will often be surprising, even in the rare instances in which they can spit back exactly what was said, written, or tweeted. People do not necessarily pick up what science communicators put down. It is not just that laypersons do not understand what is communicated. Rather, as FTT explains, an individual's prior knowledge, experience, worldview, and beliefs about what is plausible (e.g., that the government would secretly poison people) color interpretation of the gist of messages. That gist drives decision-making apart from memorization of facts (13).

That gist is also distinguished from confirmation bias (the tendency to look for confirmatory evidence rather than disconfirmatory evidence), motivated reasoning (the effect of pro/con attitudes on the unfair evaluation of evidence), and similar ideas. A gist representation need not result from confirmation bias or motivated reasoning; it pertains to how information is understood, that is, the bottom-line meaning of a message from an individual's perspective. Confirmation and motivational biases are part of the mix of factors that can shape gist representations of meaning, but these factors cannot be reduced to one another. As discussed in the section below on *Hearts and Minds*, gist representations of messages often determine emotional reactions and cue the retrieval of values that motivate people, thus playing a foundational role in the acceptance of information and misinformation.

Categorical Gist and the Zero Effect

The fuzzy-processing preference of FTT predicts that most people not only rely on the gist of information, but that they rely on the simplest gist. For example, imagine having a respiratory infection that is so bad that you decide to go to the emergency room for treatment. Many patients expect antibiotics in this situation even when their infection is likely to be viral (and, thus, not treatable with antibiotics). We found that this expectation was sometimes associated with misconceptions, an inaccurate gist of infections dubbed "germs are germs" to convey that viruses were not distinguished from bacteria (14). However, both patients and physicians favored antibiotics for respiratory infections likely to be viral even when they were aware that antibiotics are not effective against viruses. In one study, 76% of patients subscribed to the gist, "why not take a risk" (WNTAR): Given a choice between staying sick for sure and possibly staying sick or getting better, they preferred the risky option. Physicians who endorsed WNTAR were significantly more likely to prescribe antibiotics (14).

The decision to go for a "hope shot" when the status quo is bad is not stupid at an individual, as opposed to societal, level. Consider having a lethal disease and being offered an experimental treatment that might save your life. All else equal, the probability that the treatment will work is immaterial; the nonnegligible possibility of life is paramount. Only FTT identifies this kind of categorical gist—that some chance is better than none—with intelligent cognition (other theories characterize categorical processing as unintelligent, but there is ample evidence of the opposite; ref. 10). People express strong preferences for options offering a possibility that no one will die even when expected losses (on average) are high. Predicted by FTT, and since replicated for many dimensions, this categorical-gist effect is sometimes called the "zero effect" because it hinges on a contrast between none and some (refs. 15 and 16; see also, ref. 17).

Categorical gist applies when outcomes are positive, too, which explains fundamental biases in decision-making that seem to defy rationality (18). Being inconsistent about risk preferences is one such bias. For example, winning a lot of money for sure is usually preferred over possibly winning more money or nothing, a risk-avoiding preference. People are risk seeking, however, when equivalent options are presented as choices between two risky gambles; they prefer the riskier option. Explanations involving nonlinear probabilities or heuristics about probabilities of winning (e.g., ref. 19) cannot explain these effects because those probabilities are present when the effects they are supposed to cause are absent (e.g., refs. 15 and 18).

The same kind of categorical gist representations used to explain these decision biases in the laboratory explain preferences for antibiotics in the emergency room, screening decisions about cancer, and avoiding HIV risk (20). Moreover, interventions based on FTT to make mental representations more gisty have successfully changed attitudes and behaviors (e.g., refs. 21 and 22). These interventions integrate extensive laboratory research on assessing mental representations of numbers (including risks and probabilities), words, pictures, sentences, and narratives with expert knowledge in science.

Therefore, people might be misinformed about scientific facts, and that will cause them trouble when they make decisions about expectations for antibiotics; thus, there is a role for knowledge of the facts in FTT (e.g., ref. 21). People might be motivated to believe that they can be cured, which allows them to distort the facts to rationalize their choices (23); thus, there is a role for motivation in FTT (e.g., ref. 9). People's emotions, such as fear of death or suffering, might cause them to "lose their heads" and make decisions that violate their own interests; thus, there is a role for emotions in FTT (24). Nevertheless, none of these constructs—ignorance of facts, motivational biases, or unreasoning emotion—is sufficient to explain the effects of gist-based intuition, the idea that judgments and decisions are shaped by fuzzy gist representations of information.

Moreover, contrary to dual-process theories that contrast low-level intuition with high-level reasoning (i.e., the heuristic-systematic distinction, ref. 25; Type 1/2 or System 1/2, ref. 26; or lazy inhibition of biases, ref. 27), research on FTT has demonstrated, in accordance with predictions, that gist-based intuition is high-level in two complementary senses: 1) It is developmentally advanced (more prevalent in adults than in children and in experts than in novices) and 2) it usually supports beneficial decisions (28). Note that, in FTT, gist-based intuition is not following your gut, as System 1 is characterized in some dual-process theories. Although modern dual-process theories claim to be agnostic about whether their processes are low-level or high-level, they ascribe biases and fallacies primarily to intuition rather than to reasoned deliberation. FTT offers a third option beyond standard dual processes: an often-unconscious, imprecise, parallel thinking process of gist-based intuition that is the mainstay of advanced cognition.

Hearts and Minds

Providing a gist interpretation of options, or several ways of viewing the gist of options, that are consistent with the facts is not persuasion. Neither is the gist a neutral representation. Gist lies between, on the one hand, utterly neutral and often meaningless facts (e.g., is a 22% risk of cancer high or low) and, on the other hand, persuasion which attempts to change beliefs or values. An honest broker can provide a bottom-line representation of facts without advocating for an ultimate decision. The ultimate decision depends on values. For example, one might believe cars cause

more pollution than mass transportation and, yet, not mandate the use of mass transportation because of the value of freedom. Gist representations cue compatible values (29). Thinking about nuclear arms in terms of who has more weapons evokes magnitude comparisons of relative strength: More is better. Thinking about nuclear arms as a categorical threat to existence evokes a nonquantitative value: Life is better than death. In general, thinking in a simpler gisty way tends to more effectively cue core values, which are similarly gisty, compared to thinking about superficial details.

Thus, scientists lament that people seem to not act on their values, but FTT offers two inroads to this problem. First, people might not interpret the gist of the facts in a way that evokes a particular value. Gist requires understanding and insight into why a value applies. Therefore, background knowledge frequently needs to be provided so that people can "get the gist." The uptake of a message depends not just on what is said but what is heard. Second, FTT distinguishes between representations of information and options versus retrieval and implementation of values. Deeply held values can fail to be retrieved. Values are mentally represented in terms of simple gists that are not necessarily tied to cues in contexts. Making those connections clear so that they become automatic and insightful, rather than leaving these connections to chance, can make messages more effective. Thus, the goal is not necessarily to change values, but to help people see how their core values are relevant to specific contexts, what has been called "far transfer" of learning or productive thought (30). The symbiotic relationship between cognition—representations and retrieval—and social values is generally underappreciated but is an emphasis of FTT.

Another key difference between FTT's approach and that of others is that FTT does not advocate deliberation (thinking harder, longer, and more elaborately about details) as the hallmark of higher reasoning, instead emphasizing nondeliberative but educated intuition. In standard dual-process approaches, intuition is typically characterized as uneducated and the opposite of deliberative thinking. In FTT, the length and amount of thinking is not the same as the nature of thinking, namely, as verbatim-based or gist-based. Gist representations support intuitive thought and, as shown in many studies, reflect education about a topic, hence, the terms "educated" and "uneducated" intuition. For example, a physician knows that too much salt is poisonous, bringing a hiker into the emergency room on a hot day, but the hapless hiker popping salt tablets thinks that salt is harmless, even beneficial on a hot day. The correct diagnosis can be arrived at through a detailed checklist and elaborate deliberation or through understanding the general concept of "balance of electrolytes," which can provoke an immediate intuition in an expert that too little or too much salt could be the culprit. Taking fewer medical dimensions into account and processing them more simply (i.e., using categorical gist) has been shown to characterize more expert physicians (relative to generalists or students; see ref. 20).

In some dual-process approaches, the alternative to encouraging deliberation is encouraging emotion. However, FTT does not advocate fighting fire with fire, that emotional appeals to misinformation must be combatted by equally unreasoning appeals to emotion. Such approaches neglect the fact that cognition—how someone interprets the gist of information—determines emotion (with some rare biological predispositions excepted). If a risk is perceived to be high and deadly, fear is the natural and reasonable reaction.

Specifically, although research has shown that incidental fear can increase risk perceptions because it suffuses our interpretation of information (31), risk perceptions also induce fear. Knowing that there is a greater than 99% chance of a 6.7 earthquake in California in the next 30 y will induce fear in Californians if they interpret the gist as "a large earthquake will occur pretty soon where I live." Note that the verbatim reading of this risk is that occurrence of an earthquake is technically uncertain (not 100%), which illustrates the difference between literal verbatim thinking and categorical gist.

Scientific communication need not be literal, dry, and emotionless. Facts can rightfully stir people to feel emotions. The affect assigned to a given option is a function of how that option is represented, and of what is being compared to what, as illustrated in the examples with antibiotics and lifesaving treatment. Depending on the nature of the options and how they compare to one another qualitatively, relevant affective values might be "saving lives is better than saving none," "no one dying is better than some dying" or, if zero is not a possibility, that "fewer deaths is better than more deaths" (6). Gain-frame wording of classic dread-disease problems (save 200 people for sure vs. 1/3 chance of saving 600 people; otherwise none) elicits "saving lives is better than saving none," whereas loss-frame wording (400 die for sure vs. 2/3 chance of 600 dying; otherwise none die) elicits "no one dying is better than some dying." Consequently, tapping into affective values depends on how options are represented: Although "Logically, all will be saved in gain framing carries the same meaning as no one will die in loss framing," (ref. 16, p. 31), different wording cues different affective values (18). Similarly, framing antibiotic choices as being about individuals elicits values such as "health is better than sickness," whereas framing antibiotic choices as being about society or herd immunity elicits values such as "it is better to not hurt other people." Because people often endorse both sets of values in principle, which one is retrieved also hinges on representing the gist of the difference between taking and not taking antibiotics as nonnegligible for an individual but nil for society or vice versa.

One might well ask how science communicators can move the public in the face of massive threats, such as global warming, when people fail to make distinctions. For example, people judged the word "tragic" to be an appropriate descriptor of lethal events associated with large and small numbers of deaths—from one to a million (32). (Conversely, labeling events as "tragic" also elicits affect and values, but here I discuss whether people ascribe the word "tragic" to different events.) Slovic and others have argued that this leads to pseudoinefficacy, demotivation linked to a sense that one's efforts are paltry, "a drop in the bucket." This phenomenon has been described as reflecting diminishing sensitivity as numbers get larger, which promotes psychophysical numbing (e.g., as in the value function in the leading decision theory, prospect theory). However, psychophysical discounting affects large numbers, not quantities as small as one. Therefore, these psychophysical functions cannot account for this effect (and others like it) in which there is higher sensitivity to one victim of a tragedy but lower sensitivity to more (33). Instead, applying the word "tragic" to any number of deaths greater than zero is a classic categorical gist effect per FTT. Rather than reflecting an insensitivity to large numbers, FTT suggests that this reflects a heightened sensitivity to the qualitative distinction between none and some. Taking care to not overclaim, FTT implies that communicating categorical distinctions may be more effective in eliciting social and moral values, in the words of William Blake (34), "to see a world in a grain of sand."

In addition to scientific expository prose, narratives or stories can be used to convey the gist of information (e.g., the film San Andreas conveys the massive power of an earthquake) and to elicit concomitant emotions. FTT was based in part on research about mental representations of narratives (see ref. 8). However, research has shown that not all narratives are effective. For example, Facebook sharing of vaccine-related news articles about the Disneyland measles outbreak was predicted most strongly by whether an article incorporated a bottom-line gist (Fig. 1 and ref. 35). The presence of stories had no significant effect on sharing by itself, controlling for length, readability, and vivid images. Stories were effective in eliciting shares to the extent that they communicated gist.

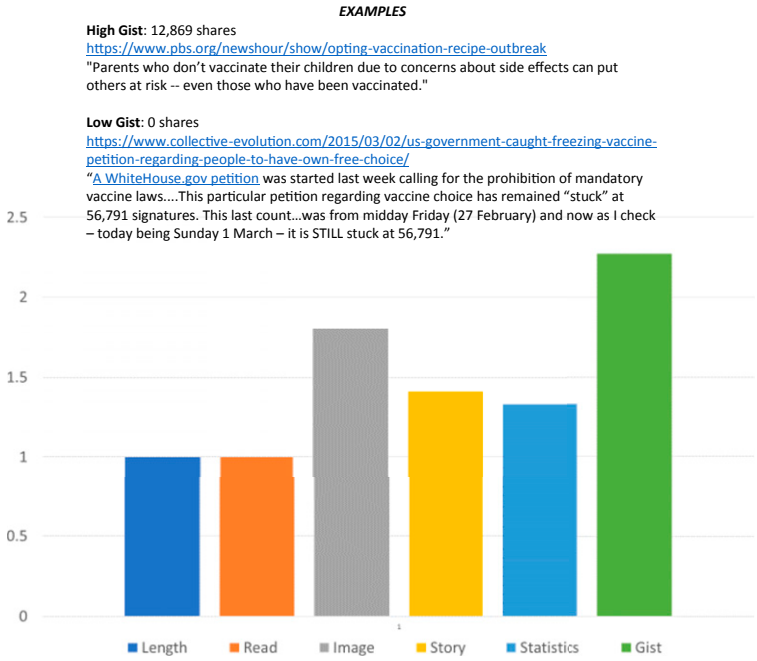

Fig. 1. Logistic regression predicting at least one share: odds ratios on the *y* axis. Coded 4,581 of 39,351 measles outbreak-related articles for length, readability, presence of vivid images, stories, statistics, and gist and measured shares on Facebook. Human judges categorized article content. Examples of low and high gist. Data from ref. 35.

Topics such as evolution, vaccination mandates, and stem-cell therapy seem to involve the heart, or motivational biases, more than the mind (36). Misinformation often pulls at the heart, such as case stories of children who develop autism or rare neurological diseases shortly after vaccination. However, FTT suggests that heart and mind are inextricably linked. Misinformation takes root in an absence of knowledge about what is plausible; it is reflected in how people represent the gist of the information that they see or hear; and the gist has a life of its own in the mind dissevered from what has actually been seen or heard. In turn, the gist induces emotions and brings to mind core values. Thus, emotion and motivation are not inevitable sources of bias that cannot be changed, but instead they are produced, in part, by how we interpret information in light of our backgrounds and experiences, including scientific literacy (37).

Coda

According to FTT, the gist is not a mental shortcut, as heuristics are in dual-process approaches; it is the destination. The gist captures the meaningful distillation of objective facts that allows people to make decisions and navigate life. It is subjective, informed by context rather than rigidly consistent, and it becomes less faithful to reality as people develop cognitively. That is, cognition gravitates more to this nonliteral representation of reality as children mature and adults gain experience. As initially predicted by FTT, specific types of gist-based false memories, decision biases, and numerically "wrong" judgments (e.g., giving more money to one child who is a victim of a disaster than to eight victims that includes that one child; ref. 32) are hallmarks of advanced cognition. On comparable child-friendly tasks, children behave more rationally (in the technical sense) than adults. Adults do make distinctions at varying levels of precision in multiple mental representations of information that they extract simultaneously from messages. However, they rely most on the simple subjective meaning of messages.

Thus, for many issues, scientific information and misinformation are in a battle for the gist. The policy choice is not simply between either changing behavior (e.g., through incentives, sanctions, and requirements) or persuasion (cf. ref. 2)—there is a third way. Science communication needs to shift from an emphasis on memorizing facts to achieving insight, retaining its integrity but without shying away from emotions and values. Achieving insight is robust because it changes hearts and minds, whereas merely controlling behavior is fragile and can erupt in political disfavor. Changing mental representations is not sufficient by itself; gist representations need to connect to values. FTT offers a framework in which we can better understand why other people do not see the gist that we do, how few of us are purely objective (and how maladaptive that would be), and how we can recognize shared core values and appreciate how scientific information connects to those values.

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