Article

# Communicating Meaning in the Intelligence Enterprise

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**Abstract**

Intelligence community experts face challenges communicating the results of analysis products to policy makers. Given the high-stakes nature of intelligence analyses, the consequences of misinformation may be dire, potentially leading to costly, ill-informed policies or lasting damage to national security. Much is known regarding how to effectively communicate complex analysis products to policy makers possessing different sources of expertise. Fuzzy-Trace Theory, an empirically-validated psychological account of how decision makers derive meaning from complex stimuli, emphasizes the importance of communicating the essential bottom-line of an analysis ("gist"), in parallel with precise details ("verbatim"). Verbatim details can be prone to misinterpretation when presented out of context. Several examples from intelligence analyses and laboratory studies are discussed, with implications for integrating knowledge from multiple sources of expertise, communicating complex technical information to nontechnical recipients, and identifying and training effective communicators. Collaboration between the academic and intelligence communities would facilitate new insights and scientifically grounded implementation of findings.

**Keywords**

gist, effective communication, intelligence analysis

## Tweet

The intelligence community should train professional gist communicators to explain complex analyses to decision makers.

## Key Points

- Individuals make decisions based primarily on meaningful categorical gists.
- To avoid misinterpretation, communicators should express the gist of analyses to decision makers.
- Gists should be elicited from domain experts. If experts disagree, seek an overarching integrative gist.
- Details, when communicated, should be explicitly linked to corresponding gists.
- Individuals excelling in gist communication should be identified, trained, and retained.

## Introduction

Intelligence organizations are tasked with informing decision makers about complex worldwide threats. The resulting analysis products are typically founded on a base of significant technical expertise, and may entail several assumptions that are not transparent to decision makers. Consequently, these analysis products can be prone to misunderstanding.

Decisions based upon misunderstood analysis products can have dire consequences. To illustrate, consider a scenario in which the intelligence community (IC) is given a directive to assess an adversary's nuclear capabilities, to determine whether a preemptive invasion is warranted. If the IC determines that no nuclear weapons are present when, in fact, they are, opportunities to prevent nuclear proliferation, an arms race, or another shift in the regional or global balance of power might be missed. If, however, the IC determines that weapons are present when, in fact, they are not, a preemptive strike might be launched without justification, committing friendly troops to a long-term, and costly, exercise in state-building and inflaming regional tensions.

The 2002 National Intelligence Estimate (NIE) presented to the President expresses one such scenario. This assessment relied heavily on information regarding the Iraqi government's attempts to obtain several specialized aluminum tubes, widely thought to be used for constructing nuclear fissile material. Based on the information available, the IC concluded that "Iraq's aggressive pursuit of high-strength aluminum tubes provides compelling evidence that Saddam is attempting to

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reconstitute a uranium enrichment effort for Baghdad's nuclear weapons program . . ." (108th Congress, 2004, p. 87). This was one of the primary rationales underlying the U.S.-led coalition's 2003 invasion of Iraq and the subsequent trial of its then President, Saddam Hussein.

This assessment is now widely considered to be inaccurate, and significant evidence favoring alternative explanations was available; yet, "The Director of Central Intelligence was not aware of the views of all intelligence agencies on the aluminum tubes prior to September 2002 and, as a result, could only have passed the Central Intelligence Agency's view along to the President until that time" (p. 139). In general, policy makers who aim to make these sorts of decisions typically do not have expertise in the many fields (including history, several engineering disciplines, geospatial imagery, political science, and others) required to make a fully informed assessment. Nor can these policy makers reasonably become expert in these fields in the time required to decide. Thus, although several factors were certainly involved in the ultimate decision, the above scenario illustrates the challenges inherent in communicating detailed analysis products to top-level decision makers.

How should analysts communicate their findings to decision makers? Clearly, analysis products must be comprehensible. Indeed, the classic intelligence cycle emphasizes that analysis products are commissioned in response to a directive from specific decision makers and must, therefore, be presented in a manner that is responsive to their concerns. However, incorrect interpretation of these products may lead to misinformation. Often, analyses require significant domain expertise and may rely heavily on mathematical models, expert judgment, and inference from a wide variety of data sources to inform decisions. The methods and assumptions underlying these analyses are typically not transparent to decision makers (Chauvin & Fischhoff, 2011). In part, this is because most decision makers have extensive strategic policy expertise but may lack the deep knowledge of the subject matter expert. Thus, when presented with an analysis product, a decision maker may lack the necessary context to correctly interpret it. For example, the U.S. Senate characterized the 2002 National Intelligence Estimate (108th Congress, 2004) as a failure to "*explain* the details of the reporting" (p. 16, emphasis added), noting that intelligence analysts are "charged with interpreting and assessing" (p. 16) analysis products.

This paper reviews findings from Fuzzy-Trace Theory (FTT), a leading theory of risk communication, which emphasizes the importance of communicating the bottom-line meaning in context—or *gist*—of analysis products to decision makers. As will be illustrated below, such meanings are often lost in official communications. In an effort to fully inform, analysis products may include several *verbatim* details, such as precise numerical data, rules (such as legal definitions), or lists of decontextualized facts. Although analysts may know how to interpret these elements in context, decision makers may not. Absent this context, policy makers may draw incorrect inferences, missing the proverbial forest (gist) for the trees (verbatim).

FTT provides actionable insights into how to communicate the bottom-line meaning in context—or *gist*—of analysis products to decision makers. In addition, Fuzzy-Trace theorists have identified specific learned and innate factors that facilitate encoding and communicating gist representations, with implications for identifying and training skilled communicators. Finally, FTT makes specific predictions regarding the factors that drive whether decision makers faced with complex information will understand a message and therefore adopt its implications.

## Fuzzy-Trace Theory: Core Constructs

Analysis products are useful to the extent that the information they communicate is meaningful to decision makers. Meaningfulness is not the same as detailed information—an analysis product may contain many details that are insignificant for the purposes of decision making. FTT captures this core theoretical distinction as follows.

### *Gist and Verbatim*

FTT assumes that individuals encode multiple representations of a stimulus—for example, the output of an analysis product, or a description of a world event. These representations are referred to as *gist*—the meaning of the stimulus in context—and *verbatim*—a detailed representation of the stimulus that retains its surface form. Gist representations tend to be simple, categorical contrasts—for example, "some" versus "none." Gist representations endure in memory and are developmentally advanced, preferred by experts over novices. In contrast, verbatim representations are precise, literal representations of the stimulus, including brittle memory representations of exact words, numbers, and pictures.

FTT's core constructs of gist and verbatim mental representations—modified and adapted from the psycholinguistic literature (Kintsch, 1974)—apply naturally to both narrative text and numerical data. When making sense of text and other online stimuli, gist representations form coherent, causal stories. These narratives "connect the dots" to offer an account more likely to be accepted because it seems to make sense.

According to consensus within the literature, coherent narratives provide a causal structure for events described (Diehl, Bennetto, & Young, 2006; Gernsbacher, Varner, & Faust, 1990; Mandler, 1983; Trabasso & Sperry, 1985; Van den Broek, 2010), therefore, conveying the *meaning*, or gist of the story. In contrast, incoherent stories contain a relatively weak causal structure. According to this theory, therefore, analysis products that produce more coherent and meaningful gist will be more influential, regardless of factual accuracy. For example, more coherent stories—such as those connecting mysterious outcomes (such as fabricated images of dead civilians on social media) to certain behaviors (e.g., known U.S. military presence)—seem more acceptable because their explanation places the outcomes in context (e.g., U.S. soldiers committed atrocities; Dauber, 2009).

According to FTT, gist representations should be more compelling than more precise, but less meaningful, representations. This formulation has empirical support. FTT has successfully predicted risky choice behavior in both laboratory and real-world contexts, including decision making by expert physicians and intelligence agents (Reyna, Chick, Corbin, & Hsia, 2014; Reyna & Lloyd, 2006), antibiotic prescribing for low socio-economic status individuals (Broniatowski et al., 2018; Broniatowski, Klein, & Reyna, 2015; Klein et al., 2017), and risky adolescent behaviors such as underage drinking and risky sexual behaviors (Reyna & Mills, 2014; Rivers, Reyna, & Mills, 2008). In each of these cases, data support FTT's prediction: Gist-based interventions that communicate the bottom-line meaning of options to decision makers, rather than reliance upon verbatim statistical communication, more effectively predict decision outcomes.

What does a gist representation look like? The distinction between gist and verbatim is often illustrated by the so-called "Asian Disease Problem" (Tversky & Kahneman, 1981)—a classic example of the framing effect, demonstrating the impact of context on decision outcomes. In the "gain frame" of this problem, a participant, confronted with a deadly disease endangering 600 people, must choose between two options:

A. 200 people will be saved.
B. There is a 1/3 probability that 600 people will be saved, and a 2/3 probability that no people will be saved.

Here, both options have the same expected value—200 lives saved on average. Similarly, in the loss frame of the same problem, participants must choose between

C. 400 people will die.
D. There is a 1/3 probability that nobody will die, and a 2/3 probability that 600 people will die.

Again, the verbatim representation leads to indifference between these options, as both imply that 400 people, on average, will die (i.e., 200 out of 600 will live).

According to expected utility theory (EUT, so-called rational choice), participants who prefer option A should prefer option C, and those who prefer option B should prefer option D, regardless of how the problem is framed. Such representations do not always lead to better outcomes (Adam & Reyna, 2005): for example, the "equal expected value" approach to the illustrative dilemma assumes that participants should be indifferent between options because, on average, they are the same. This is a misinterpretation since "on average" is meaningless when faced with a decision that is unlikely to be repeated and whose consequences may be catastrophic (Reyna, 2018). In practice, most select the risk-averse option A in the gain frame, but the risk-seeking option D in the loss frame, violating EUT's predictions. This is the *framing effect*.

FTT explains the framing effect as follows: When presented with the stimulus just described, decision makers also encode a gist representation in parallel with the verbatim representation, and prefer to rely on this gist when deciding. For the gain frame, the gist is (Reyna & Brainerd, 1991),

A. Some people will be saved.
B. There is some chance that some people will be saved, and some chance that no people will be saved.

Here, a decision maker would prefer option A because it does not entail the possibility of saving no people. Conversely, in the loss frame, the gist is,

C. Some people will die.
D. There is some chance that some people will die, and some chance that no people will die.

Here, a decision maker would prefer option D because it allows the possibility of no people dying.[1]

Thus, verbatim details, when presented without context, can lead to misinterpretation because decision makers may encode, and base their decision upon, an inappropriate gist from a given stimulus. Similarly, if an analyst presents a decontextualized verbatim estimate, such as that some outcome might occur with 65% confidence, a decision maker might interpret this confidence level as "low," "moderate," or "high" depending on their base rate.

This motivates our first policy insight: *Empirical results indicate that decisions are more informed by gist representations than they are by verbatim details*. Communicators should aim to express the correct gist of an analysis product to decision makers. Absent a gist, detailed information may be prone to misinterpretation.

### *Gist is Developmentally Advanced*

How are we to know the gist? Ask the experts. Unlike standard dual-process approaches (Kahneman, 2003; Stanovich, West, & Toplak, 2011), which characterize intuition as fast but frequently inaccurate (when compared to slow, deliberative processing), FTT recognizes that gist processing is advanced (Gaissmaier & Schooler, 2008; Helm, Garavito, Rahimi-Golkhandan, & Reyna, 2017; Reyna, 2004; Reyna & Brainerd, 2011), and results from the development of experience in a given cultural or professional milieu (Reyna, Wilhelms, McCormick, & Weldon, 2015). This means that experts tend to rely more on gist when compared to novices (Reyna et al., 2014).

Furthermore, experts tend to have stronger preferences to rely on their experience in a domain. For example, Reyna et al. (2014) demonstrated that intelligence agents showed larger decision biases than an age-matched sample of nonexpert adults when answering risky-choice framing problems, which are designed to manipulate context in a laboratory setting keeping all else equal. In practice, informed gist representations generally lead to better outcomes when the decision context matches the domain of expertise.

We illustrate the distinction between expert gist and novice verbatim representations in the context of the following stimulus derived from the 2002 NIE:

> In 2001, the IC became aware that Iraq was attempting to procure 60,000 high-strength aluminum tubes manufactured from 7075-T6 aluminum, with an outer diameter of 81 mm, and inner diameter of 74.4 mm, a wall thickness of 3.3 mm and a length of 900 mm. The tubes were to be anodized using chromic acid and were to be shipped, wrapped in wax paper and separated from each other. (108th Congress, 2004)

Here, the verbatim representation is simply a detailed description of the stimulus: 60,000 high-strength aluminum tubes manufactured from 7075-T6 aluminum, and so on. Thus, a novice analyst relying on the verbatim representation of the aluminum tube stimulus might utilize a rote strategy comparing the stimulus to a set of rules, for example, that "Seven-thousand series aluminum alloy . . . when formed into a tube of more than 75 mm in diameter, is a controlled item . . .which Iraq is prohibited from importing because it could have nuclear applications" (p. 88). Specifically, the analyst would observe that 7075-T6 aluminum is a seven-thousand series aluminum alloy, and that a tube with an 81 mm diameter has a diameter greater than 75 mm. These rules derive from basic engineering equations, which state that the tubes are strong enough to be used for uranium enrichment without structural failure. Using the above rule, the analyst might conclude that Iraq was attempting to procure materials with nuclear applications.

In contrast, several experts concluded that these tubes could likely not be used for uranium enrichment. This conclusion was informed by relevant context, combined with expert judgment. The following list illustrates some factors that might have informed this gist:

- Prior Iraqi centrifuge technology was already more advanced than that represented by these aluminum tubes, and the tubes were not consistent with known Iraqi centrifuge designs (pp. 88-89), making it unlikely that these tubes would be used for nuclear applications.
- The engineering equations mentioned above assume that the tubes lack structural defects—a potentially unreasonable assumption given the tubes' uncertain provenance. In fact, the Central Intelligence Agency (CIA) tested this assumption, finding that "the failure speeds of the tubes ranged from 96,000 rpm to 100,100 rpm . . . just above the speed the tubes were expected to be run in an operating centrifuge—90,000 rpm . . ." (p. 108).
- Although the failure speed of the tubes exceeded the expected operating speed, for all practical purposes ". . . the tubes were not strong enough to run consistently at that speed . . ." (p. 108). Thus, the IC's nuclear engineering experts in the Department of Energy (DOE) concluded that "[t]hese specific tubes had structural imperfections that would have precluded their use in a centrifuge" (p. 108).

Rather than simply including more knowledge, the above examples demonstrate that experts place that knowledge in context, requiring judgment. This judgment would likely be lost to a novice who might have instead attempted to communicate detail, such as by stating that the tubes are in violation of the letter of international law, that basic engineering equations predict that they could be used consistently at 90,000 rpm, or that the failure speed of the aluminum tubes after testing was 96,000 rpm, which is greater than the expected operational speed of 90,000 rpm. In contrast, an expert would communicate a less precise categorical gist, such as: "Running your car up to 6,500 rpm briefly does not prove that you can run your car at 6,500 rpm cross country. It just doesn't. Your car's not going to make it" (p. 108).

This motivates our second policy insight: *Elicit to-be-communicated gist from relevant domain experts.*

## Under Uncertainty, Experts May Differ

In general, gist representations may, but need not, be informed by domain expertise—that is, gists can lead to incorrect inferences if relevant knowledge is lacking. However, gist representations are not restricted to experts; nonexpert adults tend to rely more on gist representations, compared to children, and this adult tendency increases with age. These "lay experts" rely on significant cultural knowledge that may be inaccurate when making sense of stimuli outside their domain of expertise. For example, FTT explains the popularity of online messages about vaccination because of the search for meaning and the tendency to interpret events despite inadequate knowledge (Reyna, 2012b). Indeed, misinformation is marked by the spread of compelling gists that are nevertheless uninformed. Similarly, gist representations may be a source of systematic bias when context and expertise are mismatched.

Experts' assessments may also differ from one another depending on the background knowledge that each one can bring to bear. For example, analysts disagreed on the uses of the aluminum tubes just discussed. Specifically, experts from the U.S. DOE concluded that ". . . the tube specifications and quantity appear to be generally consistent with their use as launch tubes for man-held anti-armor rockets or as tactical rocket casings" (p. 89), whereas a second gist, expressed by a centrifuge analyst from the CIA, was that the tubes "have little use other than for a uranium enrichment program" (p. 88). This discrepancy can be explained, in part, by the background knowledge available to each expert. For example, a centrifuge analyst may not have expertise in rocket design, whereas rocketry experts may not have detailed knowledge of specific centrifuge design requirements. Ultimately, a team of DOE analysts with expertise in both fields concluded that both use cases are plausible (p. 92)—an overarching gist that integrates these seemingly conflicting conclusions.

This discussion motives our third policy insight. Gists may differ for two reasons: (a) Some gists may be more informed by expertise than others, (b) different sources of expertise may not converge on the same interpretation. *When gists differ, investigation must determine why, with discrepancies between experts resolved by an overarching gist that can place each expert's assessment in context.*

## Linking More Precise Representations to Categorical Gists

Conflicting gist representations boil down to the following categorical risky gamble: Some chance that the tubes could be used for nuclear weapons and some chance that the tubes could be used for conventional weapons (and therefore, not for nuclear weapons). A decision maker might face a choice between possibly launching a preemptive strike with some chance that it is unjustified, and possibly not launching the strike with some chance that it enables an adversary to become a nuclear-weapon state. The choice presents two options with the same categorical gist: "some chance of a negative outcome."

When two decision options have the same categorical gist, participants must rely on more precise representations. Consider a decision maker faced with a choice between

A: $1 million with 11% chance and $0 with 89% chance

B: $5 million with 10% chance and $0 with 90% chance (Allais, 1953)

Because both options have the same categorical gist—"some money with some chance and no money with some chance"—FTT predicts that participants will instead rely on a more precise ordinal gist favoring option B:

A: less money with some chance and no money with some chance

B: more money with some chance and no money with some chance (Broniatowski & Reyna, 2017)

Accordingly, DOE experts favored an ordinal assessment of the likelihood that the aluminum tubes could be used for nuclear weapons development, noting that ". . . a gas centrifuge application is credible but unlikely and a rocket production application is the more likely end-use for these tubes" (p. 92).

In contrast to this ordinal DOE gist, the CIA concluded that the tubes were "probably intended for an Iraqi uranium enrichment centrifuge program" (p. 88)—a categorical gist. FTT posits a "fuzzy processing preference," meaning that people prefer to rely upon gist representations when compared to verbatim representations and tend to assign more importance to representations that are less detailed, less precise, and, therefore, easier to remember when making decisions. Furthermore, the examples illustrate that attempts to express precise probabilities may paradoxically lead to misunderstandings. Finally, FTT predicts that when faced with a simple categorical gist implying certainty, ordinal distinctions may be less compelling. Although more precise representations of analysis products are necessary to ensure accurate results, attempts to communicate these precise details out of context will likely be unsuccessful simply because they will not be as easily comprehended. This is consistent with reports by the Defense Intelligence Agency (DIA), which attempted to synthesize CIA and DOE findings: whereas "DIA analysts found the [categorical] CIA presentation to be very compelling" (p. 128), DOE's ordinal assessments and other, more precise verbatim details, were "limited in their distribution . . . or were very narrow in scope" (p. 91).

FTT predicts that multiple representations are encoded in parallel, and that these representations are distinct. People may hold conflicting representations of a stimulus in memory without recognizing the logical discrepancy (Adam & Reyna, 2005). Thus, people may encode verbatim details but may not change overall gists (Nyhan, Porter, Reifler, & Wood, 2017). However, details can be more compelling if they are linked to a categorical gist. For example, when examining factors driving online information sharing in the domain of vaccine communication, results fit FTT's predictions (Broniatowski, Hilyard, & Dredze, 2016): expression of both a gist and verbatim details provided distinct sources of variance explaining an article's likelihood of being shared on Facebook at least once; however, among those articles that were shared at least once, only the expression of a gist was significantly associated with an increased number of shares. Thus, gist seems to be the engine propelling an article's sharing online.

This motivates our fourth policy insight: *More precise representations will be more compelling if they are explicitly linked to a categorical gist.*

## Who Should Communicate Gist?

In prior research (Broniatowski & Reyna, 2017), reliance on gist versus verbatim representations is mediated by individual personality differences and skills, including numeracy

(Fagerlin et al., 2007; Liberali, Reyna, Furlan, Stein, & Pardo, 2012; Reyna & Brainerd, 2007) and Need for Cognition (Cacioppo, Feinstein, & Jarvis, 1996). Individuals possessing these traits tend to resist decision biases in framing problems because they have both the willingness and the ability to perform in-depth analyses.

These factors may be used to identify individuals within defense and intelligence organizations who excel at communicating the meaning of complex analyses to policy makers. Some of these traits may be selected for, whereas others may be instilled through training (e.g., numeracy and domain expertise). Indeed, many analysts likely possess these traits because of self-selection.

This motivates our fifth policy insight: *The innate and acquired factors that enable effective gist communication may directly inform recruitment and training efforts within the IC.*

## Policy Recommendations

Several policy recommendations and areas for future research follow from this review. The fundamental argument is that the IC develop a cadre of professionals who excel in communicating the gist of analysis products to decision makers. This argument is based on five policy insights, introduced earlier and elaborated here:

1. Beyond simply providing decision makers with more details, communicators should aim to express the gist of an analysis product—that is, its meaning in context. Absent such context, any detailed information may be prone to misinterpretation.

Gists are context dependent. For example, the same verbatim stimulus may yield different gists in the domain of medical decision making (e.g., a 5% risk of cancer may be high in some contexts but low in others; Reyna, 2008). Therefore, a standardized approach to deriving gist from verbatim numbers (e.g., using verbal quantifiers; Chauvin & Fischhoff, 2011) will not likely be adopted across different domains of expertise with different professional cultures. Thus, research needs to determine how, specifically, to bridge the gap between experts' gists and the gists of policy makers within the intelligence domain.

2. Several gists are possible, and not all are informed. Gists should, therefore, be elicited from experts in relevant domains.

Whereas experts are more likely to rely on informed gist representations, nonexperts may either use brittle rote verbatim rules or inappropriate gist representations when evaluating analysis products. Therefore, when choosing gists to express to policy makers, communicators should verify that these gists are consistent with those held by domain experts.

In addition, several special circumstances may also apply to the intelligence community, including sensitivities around communicating classified information. Here, gist communication would be especially effective because an analyst who is "read in" to a specific program may be able to effectively communicate the gist of a specific analysis product without necessarily revealing sensitive sources and methods.

3. When gists from different sources of expertise do not agree, communicators should seek an overarching integrative gist.

Individuals possessing the ability to generate an overarching interpretation—for example, because they have expertise in both fields—are ideal to perform this integration. However, one person cannot typically be expert in all things. Unreconciled gists may indicate a need to gather more information. Making a decision might entail integrating information from several domain experts into a coherent set of scenarios, each of which may be communicated to decision makers.

4. Details, when communicated, should be explicitly linked to corresponding categorical gists.

Communicators may be trained to describe analysis products as categorical scenarios along a small number key dimensions: for example, probability, consequence, and possibly time (Broniatowski & Reyna, 2017). Unlike standard cost–benefit analyses, options are likely to be more comprehensible to decision makers if they are communicated in gist categories—that is, likelihoods may be characterized as *possible* or *essentially nil chance* (Stone, Yates, & Parker, 1994); the latter options would have special emphasis only if their outcomes are sufficiently catastrophic or otherwise salient as to merit planning despite their being highly unlikely (i.e., if they are high-impact low probability events). Furthermore, if multiple scenarios are possible, communicators need to express this categorical gist in addition to including more precise information; otherwise, a categorical gist expressing certainty may overwhelm an ordinal gist expressing relative likelihood. One proposed approach links categorical gist representations to verbatim details in the domain of vaccination (Broniatowski et al., 2016).

5. Individuals who excel at gist communication and translation should be identified, trained, and retained.

Gist communicators should have enough domain expertise to translate analysis products into categorical representations, while also possessing sufficient familiarity with decision makers' priorities to know how to characterize these events in a meaningful way. Furthermore, frequent feedback from both experts and decision makers can help verify whether the associated gists are both accurate and responsive. Finally, organizational structure may also play an important role in effective gist communication (Broniatowski, 2018; Broniatowski & Moses, 2016).

These five insights are based upon a large body of empirically validated theory, FTT, which has demonstrated applicability across several contexts. Beyond laboratory studies (see Reyna, 2012a, for a review), FTT has demonstrated the ability to make actionable predictions in the domains of intelligence analysis (Reyna et al., 2014), medical decision making (Reyna, 2008), legal reasoning (Brainerd, Reyna, & Poole, 2000; Reyna, Mills, Estrada, & Brainerd, 2006), advertising (LaTour, LaTour, & Brainerd, 2014), public health (Reyna & Mills, 2014), text comprehension (Reyna, Corbin, Weldon, & Brainerd, 2016; Reyna & Kiernan, 1995), engineering (Broniatowski, 2018; Broniatowski & Tucker, 2017), and others. Indeed, the wide reach of FTT's findings suggests that they are broadly applicable across the intelligence enterprise, and especially at the interface between intelligence agencies and policy makers. Consequently, the recommendations outlined above may be best implemented at the level of the Office of the Director for National Intelligence (ODNI), while simultaneously being tailored to the specific needs of individual intelligence agencies.

The costs of implementing such a scientific approach to gist communication would be minimal: the intelligence enterprise already recognizes the value of "Bottom Line Up Front" (BLUF) communications when executing policy briefs; however, this approach is primarily heuristic. In contrast, FTT offers an approach grounded in replicable scientific theory with specific criteria that may be used to evaluate the extent to which a given message does indeed communicate a coherent gist. In addition, we have identified traits that may be used to train and recruit individuals excelling at gist communication. Existing training protocols may be modified to take these traits into account. Thus, implementation of these recommendations need not be costly to derive significant benefit. Finally, we believe that adoption of these recommendations would have significant benefits to stakeholders across the intelligence enterprise, including to analysts seeking to convey their findings, to decision makers who seek to draw conclusions that are informed by the best available evidence and expertise, and ultimately, to the agencies' mission of public service.

Beyond these five insights, several open questions remain: How much expertise is needed for such "translators" to effectively communicate gists? To what extent is the ability to do so innate versus learned? To what extent do lessons derived from the laboratory setting and other domains (e.g., medical decision making) translate to the intelligence community? What is the appropriate combination of bottom-line gist and verbatim detail that effectively communicates an analysis product while also establishing the communicator's credibility? All of these questions remain fruitful areas for further research, promising exciting opportunities for productive collaboration between the academic and intelligence communities.

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## Note

1. Other theories, most notably Cumulative Prospect Theory (CPT) also predict framing effects; however, several experiments support Fuzzy-Trace Theory's (FTT) predictions over those of CPT in critical tests (Broniatowski & Reyna, 2017; Kühberger & Tanner, 2010; Reyna, Chick, Corbin, & Hsia, 2014). Chief among these are "zero-truncated" framing problems, where the risky option B is "there is a 1/3 probability that 600 people will be saved"—attenuating the framing effect since there is no "some vs. none" contrast. In contrast, in a "nonzero-truncated" framing problem, when option B reads "there is a 2/3 probability that no people will be saved," the framing effect is once again present.

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