RESEARCH MONOGRAPH

Look or Leap?
Unpacking Risk Propensity in Intelligence Professionals

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Abstract

Research on the topic of Intelligence Community (IC) workforce behaviors has long overlooked the potential influence of risk propensity in IC professionals. Risk propensity is defined as one's natural tendency or willingness to take risks, also called risk orientation or risk attitude. Decades of research indicate risk propensity is a relatively stable trait providing insight into multiple behaviors. The private sector has realized how risk propensity within the workforce influences business operations and is beginning to employ risk psychology to its advantage. This Research Monograph draws from the risk psychology and cognitive heuristics literature and uses a mixed-method approach to examine risk propensity in intelligence professionals. Analysis of quantitative and qualitative survey results sheds light on the extent to which individual risk propensity shapes behavior variables in intelligence professionals. The study finds that understanding risk propensity is crucial for the IC. Risk-oriented individuals tend to be more decisive; the data also suggest risk propensity influences their actions and communications. The IC would be wise to recognize, as the private sector has, the value of behavioral science as a tool to improve its practices and build more effective, cognitively diverse teams. Continued research on risk psychology within the intelligence field will contribute to ongoing improvements in this profession riddled with uncertainties.

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Key Findings and Recommendations

- Based on this study of risk propensity and behavior among a group of intelligence professionals, a positive correlation between decisionmaking and the study participants' assessed risk propensity indicates that the more "invincible" individuals believe themselves to be, the more likely they are to take risks and the more decisive they tend to be.
- This study also shows that the higher individuals score on an audacity/boldness scale, the more likely they are to use "high confidence" terminology in presenting their judgments. Nonetheless, the study participants indicated overall low opinions of the Likelihood and Confidence scales, confirming ongoing debate among intelligence professionals about the usefulness of these scales commonly used in IC assessments.
- Gender plays a significant role in risk profiles. The female participants in this study tended to score lower in overall risk orientation, impunity (with a higher fear of punishment), and adroitness (less agile). Interestingly, gender was not statistically significant on the audacity/boldness scale.
- The intelligence professionals who participated in this study were—at a statistically significant level—more comfortable providing an intelligence briefing when the impact of their assessment or recommendation was known—specifically when lives or financial stakes were at risk.
- This study supports improving awareness of individual differences across the risk propensity spectrum among IC professionals. The IC should consider training on understanding and appreciating how risk propensity and individual biases can impact how individuals communicate, make decisions, and take actions—especially in informal interactions where there is no time for bias-mitigating protocols.
- Intelligence failures often happen because no one questions the analysis. Purposefully dispersing risk-takers across the IC workforce and including them when establishing a team could ensure a balanced approach to challenging judgments and generate clearer, more direct, and bolder assessments.
- Implementing practices for cognitive diversity would also strengthen the IC, as cognitive diversity is a vital component of improving operational intelligence. Specifically, the IC should consider risk propensity within a cognitive diversity initiative.
- The IC's need for novel—indeed, unconventional—approaches to 21st century national security concerns, however, also argues for the creation of "red teams" of high-risk propensity individuals. Such teams would be "safe spaces," where cognitive risk-takers could develop new techniques for IC innovation and leadership.

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Underappreciated Relevance of Risk Propensity in Intelligence Professionals

In today's fast-paced, dynamic world of intelligence operations lie high-stakes situations where the difference between ambiguity and certainty carries great consequences. Consider the following scenario: a field commander receives conflicting assessments from two intelligence professionals regarding the location of 100 women about to be moved by human traffickers. One confidently and definitively asserts the location, and the second diffidently suggests only a *likely* location. Despite having access to the same information, these two professionals communicate their information with very different probabilistic language. With the response being time-critical in this example, the commander may be confused, considering both intelligence professionals have similar experience, training, and education. The disparity in their assessments and their presentations illustrates the complicated intersection between risk and uncertainty and raises the question of whether an intelligence professional's risk propensity impacts how they conduct and offer their analysis.

In the field of intelligence, uncertainty is inherent. This environment involves gathering and analyzing information and presenting assessments or recommendations to individuals with greater responsibility to act on the information. How intelligence professionals handle this inherent uncertainty may be informed by their tendency or willingness to take risks or engage in risky behaviors—that is, their risk propensity. This propensity is a psychological trait that can shape one's choices when confronting risk and may influence the judgments made and actions taken by intelligence professionals confronting uncertainty.

In the hypothetical scenario, the intelligence professional with a definitive assessment of the location displays a higher risk propensity. This individual is willing to provide a conclusive recommendation with the information at hand, indicating an inclination toward decisiveness and embracing the risk involved, while knowing—and acknowledging—the uncertainties. The second individual, who suggests only a likely location, demonstrates a lower risk propensity. This individual shows a preference for caution and calculated decisions. Consider the impact on this scenario's outcome: the different ways these two individuals made their judgments and conveyed their assessments could persuade a commander's decision, resulting in saving 100 lives or missing the opportunity to save 100 lives.

THE ROLE OF PERSUASION

A well-established principle is that intelligence professionals do not directly "make decisions"; their role is to provide assessments and recommendations to *inform* the decisionmaking process. Intelligence can directly influence national security decisions, and policymakers and military operators desire input from their intelligence counterparts. Highlighting the importance of intelligence persuasion, a former secretary of state informed an intelligence analyst after an intelligence failure, "You told me, but you didn't *persuade* me."[1] Intelligence professionals are potentially powerful. They must choose when and how to boldly persuade and how to communicate their judgments.

This example of dissimilar assessment presentations highlights the intersection of risk propensity and behavior in the intelligence field. The differences in how individuals perceive—and process—risk can shape their interpretation of information and influence how they communicate their assessments. The scenario further underscores the importance of considering risk propensity in intelligence professionals. Surprisingly, studies on the practice of intelligence largely overlook the impact of an intelligence professional's risk propensity. Respected works central to the field, including Richards Heuer's *Psychology of Intelligence Analysis*,[2] have advanced the IC's understanding of cognitive biases or mindsets and their effect on the analytic process, but not individual risk propensity and its implications. Studying this trait can provide additional valuable insight into individual cognitive processes and behavioral preferences that, in turn, can enhance comprehension of an operational intelligence environment.

"In all my years working as an analyst or an analytic tradecraft specialist, I don't think I can recall an instance where we really discussed risk propensity in analysts. Sure, we spent a huge amount of time thinking about likelihood and confidence statements, but those were almost always shaped in review by factors external to the analyst making the assessment, with little—if any—acknowledgement given to any individual analyst's cognitive inclinations."

– JOSH KERBEL
Professor of Practice National Intelligence University

More specifically, this study focuses on risk propensity within less formal interactions, such as impromptu questioning, briefings, or discussions with decisionmakers. Although intelligence professionals aim for objectivity, the IC cannot deny the subjectivity that comes into play during the vast amount of daily informal intelligence sharing. These informal occasions reflect what behavioral psychologist Daniel Kahneman called the System 1 framework—a fast, intuitive, automatic process that quickly sizes up a situation.[3] Subjectivity occurs because not all intelligence work affords the luxury of time or complete information to address every uncertainty or undergo the scrutiny of policies and procedures—such as Intelligence Community Directive 203 (ICD 203), *Analytic Standards*—which endeavor to mitigate biases and remove subjectivity.[4] These IC policies and procedures promote using the System 2 framework—a slower, more deliberative process that Kahneman described as analytic and methodical.

Today's intelligence environment is complex and—although the IC put into place measures, such as ICD 203, to support objectivity—informal intelligence, which often occurs at the tactical and operational levels, is not held to the same standard as analytic intelligence products. This complexity allows biases and personality traits to infiltrate and affect intelligence professionals' work due to System 1's subjective nature. Whether the intelligence officers are answering a question at a briefing, having a conversation with a superior, or talking to an operations counterpart, System 1 thinking drives these crucial moments and biases fill their System 1 thinking.[5] The intelligence professional can slow down, work toward System 2 thinking, and add logic, but the IC environment does not always offer the time for reflection. This research aims to focus on those daily informal intelligence moments that can be filled with reaction and instinct. Although biases are plentiful in the parties involved in these interactions, this study focuses on the intelligence professional, not the operational commander or decisionmaker.

Research Question: Measuring Risk Propensity's Impact

This study addresses the question: To what extent does risk propensity in intelligence professionals influence their behavior, specifically their actions, communications, and decisions?

The purpose of this research is to study risk propensity's impact, trends, and influences in intelligence professionals. This research deliberately uses the term "intelligence professional," as opposed to intelligence analyst, to encompass the broader range of individuals—serving in military or civilian organizations—who are called upon to use intelligence to inform decisionmaking. Although all intelligence analysts are intelligence professionals, not all intelligence professionals are analysts.

This work argues that individuals and intelligence agencies should better understand the implications and ramifications of individual and workforce risk propensity. Everyone possesses different levels of comfort with risk, which influences their recommendations up the chain of command or assessments that inform policymakers and how they communicate them.* Yet, the IC does not explore this trait within intelligence professionals. The IC relies on ICD 203 to mitigate biases while forgetting the considerable influence that intelligence professionals have in informal engagements where ICD 203 is not applied. Testing, baselining, and managing intelligence professionals' risk propensity tendencies would allow for greater cognitive diversity, more precise training, personal development, and more effective team building.

Relevance to the Intelligence Community

Intelligence studies have analyzed IC failures over the past 50-plus years to determine what went wrong in hopes of reducing or preventing future failures. The IC has learned that biases and lack of alternative views

* This research specifically scopes to the intelligence professional. Acknowledging that the customer's risk propensity affects their receptivity to the intelligence presentation and their own decisionmaking, the author did not examine the cognitive heuristics of the customer but recommends this topic for a follow-on study.

contributed to these failures. In turn, the IC has created policies and standards to address these shortfalls. Most specifically, ICD 203, as previously mentioned, is the main tool applied to mitigate biases and to help ensure the IC stays objective, but this standard only applies to formal "finished" intelligence. This study looks at moments outside this formality. Understanding how risk propensity impacts behaviors, when no bias mitigation mechanism is in place, is critical to the IC's future success.

Literature Review: Lessons From Risk Psychology and Dual Process Theory

This research combines risk psychology and cognitive heuristics to examine the risk orientation of intelligence professionals. This section reviews risk psychology and dual process theory as two frameworks for better understanding the role of risk propensity in how individuals approach decisionmaking and the presentation of their analysis and judgments—and posits widening the aperture to apply this understanding to the work of intelligence professionals.

Risk Psychology: A Typology for Strengthening Intelligence Work

Risk psychology studies how people perceive and assess risk, respond to it, and behave with it—all things related to thinking about risk. This field interrelates with cognitive diversity, cognitive heuristics, and personality studies. As studied by cognitive and behavioral psychologist Renato Frey and his colleagues, risk propensity has been shown to be a stable personality trait.[6] Researchers study personality traits because these characteristics often influence how people make decisions and react to risk. The terms introvert and extrovert are basic personality traits familiar to most. They stem from typological theory made famous by psychologist Carl Jung. Typological theory says, "Each of us is born with a predisposition for certain personality preferences."[7] Jung posited that our preferences stick with us throughout our lifetime. Although a person's preferences can change over time, the original typological theory provides the groundwork for how we look at personality traits within individuals. Frey's work provides critical insights into looking at risk in individuals' general preferences and within domain-specific areas, even as academic debate continues on how risk propensity fits into personality. A recent study by psychology professor Scott Highhouse et al. shows that risk propensity is independent of the highly regarded five-factor model of personality, which categorizes openness, conscientiousness, extroversion, agreeableness, and neuroticism as the five personality traits that remain relatively stable throughout a person's lifetime.[8] The study by Highhouse and his colleagues adds risk propensity as a separate factor, deserving more attention for its role in behavioral decisionmaking.[9]

Research on the psychology of risk presents varying views on risk propensity and multiple terms for similar concepts; these terms all describe variations of risk aversion, risk willingness, and risk seeking.[10] This study primarily uses the term **risk propensity** to define **one's willingness or tendency to take risks,** but also may use interchangeably related terms such as risk orientation, risk attitude, risk profile, risk preference, or risk inclination. As stated above, some research shows that risk propensity is a relatively stable personality trait, and those risk-oriented in one area of life are also risk-oriented in others.[11, 12] Other studies, however, demonstrate that intense life events can affect one's risk attitude, such as the example of going to war presented in clinical neuropsychologist William Killgore et al.'s examination of "Post-Combat Invincibility."[13] Several studies, including one by psychologist Jonathan Baron, also show that risk propensity can provide insight into decisionmaking.[14] Expanding on this application, political strategist Michele Wucker highlights how businesses are now looking into risk propensity as a means "to improve operations and build more effective teams."[15] Wucker also notes that risk personality assessments are being used in fields where "people factors" matter, including "pharmaceuticals, energy, and transportation."[16]

A review of risk-psychology literature shows that the majority of research focuses on fields such as finance, economics, and health. Although some research looks at risk propensity in the military,[17] there is a notable gap in research on intelligence professionals' behavior regarding risk. This gap is surprising due to the nature of the field of intelligence, which is filled with uncertainty and risk. This study aims to fill this gap.

Dual Process Theory: Art Versus Science

Although risk studies in intelligence are rare, debate on "thinking" is abundant. Such discussions often arise due to highly publicized intelligence failures in the IC. The 9/11 and Iraq Weapons of Mass Destruction failures sparked deep conversations on what went wrong in the analysis. These conversations probed analytic rigor, logic, and standards. As expected, the IC questioned existing processes and sought ways to improve them, further sparking the debate on the "Art versus Science" of intelligence. National Intelligence University Professor Josh Kerbel describes this debate beautifully:

> On one side of this debate is the "analysis as science" school of thought whose adherents favor a less individualistic or idiosyncratic and more "rigorous" approach to analysis. On the other side of the divide are the "analysis as art" adherents who argue for an analytic approach that places greater value on experience, intuition, and "feel" versus some artificially sterile scientific approach.[18]

Table 1: Dual Process Theory: Comparison of Terms

• Intuition	• Logic
• Type 1	• Type 2
• System 1 Thinking	• System 2 Thinking
• Art	• Science
• Mental Shortcuts	• Analytic Rigor
• Thinking Fast	• Thinking Slow
• Quick, Responsive	• Slow, Deliberate
• Biases/Preferences	• More Objective

Note: Table 1 was created by the author, who acknowledges the influence of the following works: Malcolm Gladwell, Blink: The Power of Thinking Without Thinking (Boston: Back Bay Books, 2007); Daniel Kahneman, Thinking, Fast and Slow (New York: Farrar, Straus, and Giroux, 2011); and Josh Kerbel, "Lost for Words: The Intelligence Community's Struggle To Find Its Voice," Parameters, May 1, 2008, https://www.semanticscholar.org/paper/Lost-for-Words%3A-The-Intelligence-Community%E2%80%99s-to-its-Kerbel/b91e7488bac442d27767a047592febded6815c63.

This "Art versus Science" debate aligns with Dual Process Theory. Dual Process Theory models intuitive thinking versus logic and analytics.[19] The terms and descriptions have varied over the years, depending on the researcher. Table 1 groups the terms.

In the IC, analytic intelligence products adhere to standards (for example, ICD 203) that require System 2 thinking. The debate on art versus science persists, however, in intelligence communication *outside* the finished production system. Persuasion and argumentation exist in both the formal and informal avenues used for communication by the intelligence professional. In a workplace culture where individuals adopt the value of objectivity and bias management, this study investigates the influence of risk inclination on individuals' recommendations and assessments, particularly in the absence of formal bias-removal measures.

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Research Methodology: Applying the Invincibility Belief Index (IBI)

Several risk-propensity tests exist in the field of risk psychology. This study uses the Invincibility Belief Index (IBI) as its primary risk-orientation measurement tool, due to the IBI's feasibility and multifactor testing. The IBI is a 20-question test that measures an individual's self-perception of vulnerability-to-invincibility; individuals who test as vulnerability-oriented are unlikely to engage in risky behavior, while those who test as invincibility-oriented are likelier to engage in risky behavior.[20] The IBI also measures three subfactors: Impunity, Audacity/Boldness, and Adroitness. The *Total Invincibility Belief Index (Total IBI) score* provides an overall individual risk profile, combined with the three subfactors, making the IBI an excellent choice for this study. In Killgore's validation of the IBI, he also found that IBI scores correlate with other risk-propensity tests. Specifically, he noted that IBI correlates to the Evaluation of Risks (EVAR) danger-seeking score and the Brief Sensation Seeking Scale (BSSS) total sensation-seeking score.[21] Killgore further reported that the IBI relates to risk-taking as a perception of consequences: risk-oriented individuals perceive bad things as unlikely to happen, while risk-averse individuals perceive bad things will happen. This perception readily applies to the way intelligence professionals approach their mission and conduct themselves: risk-averse intelligence professionals may perceive that their work could result in losing lives, while risk-oriented intelligence professionals may perceive their work as resulting in saving lives.

Although the literature review revealed applicable studies in risk psychology and dual process theory, little research in the intelligence field examines how the risk propensity and perceptions of intelligence professionals affect their work. And yet, as noted above, risk-taking as a perception of consequences has clear implications for the work of the IC. This study fills this research gap and looks at intelligence professionals' Total IBI scores and three subfactor scores to represent their risk propensity.

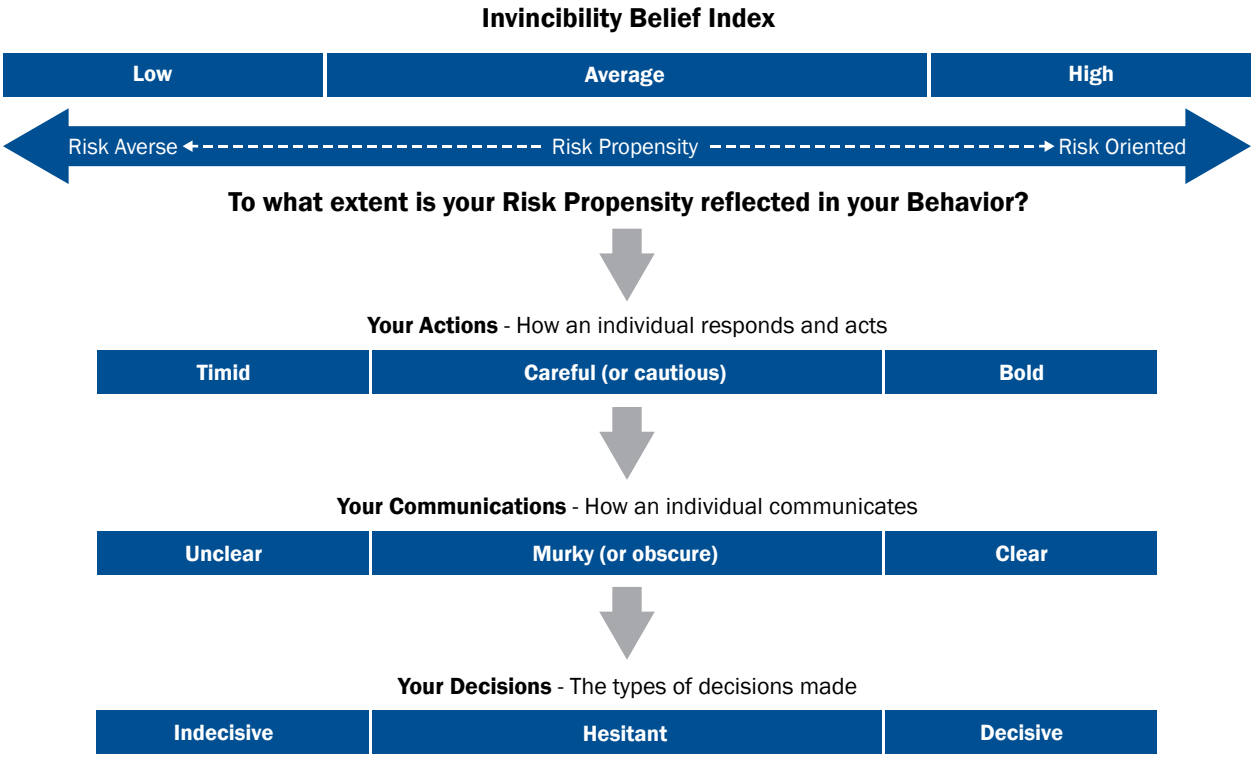
Testing Four IBI-Related Hypotheses With Two Variables: Risk Propensity and Behavior

This research explores the impact of risk propensity on individual intelligence professionals' recommendations and assessments across various points of behavior, particularly within informal contexts. This study

focuses on two main variables: *risk propensity,* serving as the independent variable and assessed through the IBI, and *behavior,* the dependent variable, further dissected into actions, communications, and decisions (Fig. 1). Additionally, this study incorporates insight from three IBI subfactors—Impunity, Audacity/Boldness, and Adroitness (Fig. 2)—although they are not the primary focus. The scale represented in Fig. 2 is influenced by Killgore's explanation of these subfactors:

- Impunity (on a continuum from Fear of Punishment to No Fear of Punishment): "appeared to measure the tendency to view oneself as immune to consequences or punishment."
- Audacity/Boldness (on a continuum from Diffident to Confident): "appeared to measure self-assuredness, confidence, and a belief that one would emerge victorious against opponents."
- Adroitness (on a continuum from Ignorant to Agile): "appeared to measure the belief that one could escape or survive adverse circumstances against overwhelming odds, primarily thru wit, cleverness, clear-headed thinking, physical agility, and skill."[22]

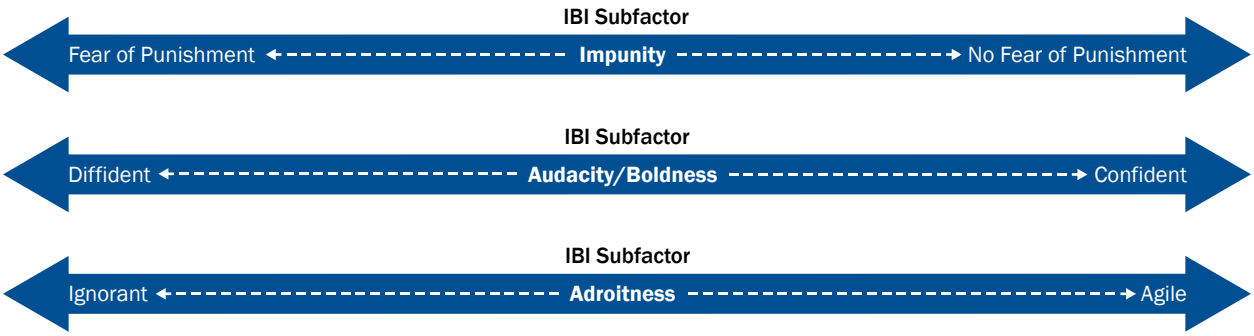
Figure 1. Invincibility Belief Index: Variable Descriptions



The role of risk as a driving force within the intelligence field—and, therefore, assigning risk propensity as this study's sole independent variable—is supported by the importance that related fields place on risk propensity within their workforces. In intelligence, risk is inevitable due to the constant presence of uncertainty in informal and formal analysis, and its significance mirrors that found in the fields of

economics, finance, and health care, due to their commonality in the high stakes involved. These fields have accepted individuals' risk profiles as fundamental. Yet, intelligence studies overlook this critical personality trait as a measurable influence factor. It is important to note that this study does not dive into potential confounding or other explanatory variables that could impact an individual's behavior, including situational factors or biases from relationships with superiors. Although these confounding variables play a role in behavior, this study focuses on the relationship between risk propensity and behavior within the intelligence field.

Figure 2. IBI Subfactor Continuum Descriptions



Note: Fig. 2 was created by the author, who acknowledges the influence of William D. S. Killgore et al., "So You Think You're Bulletproof: Development and Validation of the Invincibility Belief Index (IBI)," Military Medicine 175, no. 7 (July 2010): 499–508, https://academic.oup.com/milmed/article/175/7/499/4344623.

This research tests four hypotheses, which are based on the author's direct observations and experiences as an intelligence professional. During her 20-year intelligence career, she has witnessed professionals who are bold, clear, and decisive to be those who are willing to take risks, and those who are risk-averse to be the opposite in nature: timid, unclear, and indecisive. These observations over time have led to these four hypotheses:

- H1: IBI positively correlates to intelligence professionals' actions.
  - *H1 null: IBI does not correlate to intelligence professionals' actions.*
- H2: IBI positively correlates to intelligence professionals' communications.
  - *H2 null: IBI does not correlate to intelligence professionals' communications.*
- H3: IBI positively correlates to intelligence professionals' decisions.
  - *H3 null: IBI does not correlate to intelligence professionals' decisions.*
- H4: High Audacity/Boldness subfactor scores correlate to participants' use of the extreme end of the Likelihood and Confidence scales.
  - *H4 null: High Audacity/Boldness subfactor scores do not correlate with participants' use of the extreme end of the Likelihood and Confidence scales.*

The author acknowledges that her professional experience, although valuable, may have also yielded personal biases.† This empirical research aims to mitigate those biases with a balanced approach of both quantitative and qualitative insight into these variables.

Mixed-Method Research Design

This exploratory mixed-method study investigates the impact of risk propensity on individuals' recommendations and assessments across various aspects of behavior, including communication styles particularly within informal intelligence contexts. The research combines quantitative survey analysis with qualitative thematic analysis of open-ended survey responses to shed light on the extent to which individual risk orientations infiltrate these variables in intelligence professionals.

Participant Demographics

The participants who volunteered for this study are intelligence professionals from one of the 18 IC elements. The participants include male and female active-duty military officers, enlisted personnel, and civilians of varying ages and years of experience—all of whom serve in US Coast Guard (USCG) Intelligence (see Appendix 1 for more demographic detail). This study excludes any supporting personnel within the intelligence workforce, such as administrative support or budget-execution professionals.

Study Measures and Data Collection

Data collection consisted of a three-part survey. Part 1 included basic demographic information collection, as cited above. Part 2 deployed the IBI test using Killgore's protocol and comprising 20 questions that, after describing a situation, asked the participants to estimate the likelihood that they would experience a particular outcome (see Appendix 2 for a representative sample from the IBI test). Part 3 consisted of Likert scale and scenario questions to build individual profiles on participant behaviors, such as actions, communications, and decisions. The author used five-point Likert scales for the survey and later condensed them to three-point scales during analysis. Part 3 also included open-ended questions to elicit opinions and followed research design scholar John Creswell's six-step qualitative thematic analysis design (see Appendix 3 for the scenario-based questions).[23] The author used jamovi—a free, open-source statistical platform—for all statistical analysis in this research.[24]

† Full disclosure: The author has a high risk propensity (with a "High" score on the IBI) and a natural intensity that led her to pursue a study of how these factors may have shaped her professional behavior as an intelligence officer—and how other intelligence professionals may be similarly shaped by their own risk propensity. CDR Tongol is well known for risk-taking throughout her 20 years of professional experience, having volunteered to deploy to Afghanistan as a Coast Guard officer in 2009, and for a straightforward and direct communication style; she is also an avid skydiver.

Coding Variables and Scoring IBI Results

As earlier displayed in Fig. 1, the author divided each dependent variable into three categories for coding. She then analyzed the participants' responses to the scenarios in part 3 of the participant survey based on the criteria she set for each category. The author applied these criteria to each response and coded the participants into the following categories:

- Actions coded into: Timid | Careful | Bold
- Communications coded into: Unclear | Murky/Obscure | Clear
- Decisions coded into: Indecisive | Hesitant | Decisive

All three of these behavior-based components—actions, communications, and decisions—are essential when dealing with uncertainty.

For the independent variable (that is, risk propensity), the author used Killgore's processing methodology to administer and score the IBI results. In Killgore's original research, he tentatively validated "zones" from "extremely low to extremely high."[25] These zones measure outward, based on his raw-score standard deviations (Fig. 3). Since Killgore assessed that these zones are only tentative and require further research, the author took the raw scores from this study and calculated new zones using the same standard deviation practices. The zones calculated from this study resulted in a Total IBI mean that aligns closely with the Total IBI mean in Killgore's validation research (54.9 to 55.7, respectively). Figs. 3 and 4 below show the differences between his original validation mean for each piece of the IBI Scale and the standard deviation (SD), as compared to the calculations for this study; resource constraints precluded conducting a retest reliability analysis as Killgore did in his study.

Most notably, although the Total IBI means closely align between this study and Killgore's original, the Impunity raw scores in this study are much *lower* and the Adroitness raw scores are much *higher*. If this participant

Figure 3. Killgore's Raw Score Means and Standard Deviation

TABLE V. Reliability Estimates and Normative Data for Total Invincibility and Factor Scores for the Entire Normative Sample (n = 174)

Scale	Cronbach's α^a	Test-Retest Reliability[b]	Normative Mean (SD)[a]
Total Invincibility	0.78	0.83	55.7 (10.7)
Impunity	0.67	0.72	65.6 (13.4)
Audacity/Boldness	0.62	0.78	58.0 (14.1)
Adroitness	0.56	0.75	44.0 (13.4)

[a]n = 174; [b]n = 162.

Source: William D. S. Killgore et al., "So You Think You're Bulletproof: Development and Validation of the Invincibility Belief Index (IBI)," Military Medicine *175, no. 7 (July 2010): 503, by permission of Oxford University Press and Dr. William Killgore.*

Figure 4. IC Study Participant Mean Scores and Standard Deviations

Scale Reliability Statistics

	mean	sd	Cronbach's α
scale	55.7	8.63	0.832

Item Reliability Statistics

	mean	sd
Total Invincibility Raw	54.9	8.52
Impunity Raw	51.1	10.73
Audacity/Boldness Raw	56.5	11.41
Adroitness Raw	60.3	11.41

sample, as a whole, exhibited a lower level of Impunity and a higher level of Adroitness, as the data suggest, these differences could be the result of many factors, including: the characteristics of the participants, the culture of their agency or service, or the IBI-testing environment. Unfortunately, the scope of this research did not allow for further duplication of IBI testing or for a more expansive IBI investigation to see if this is an anomaly specific to USCG intelligence professionals. Future research should explore these differences.

Nonetheless, the close alignment of the Total IBI means and satisfactory internal consistency (Cronbach alpha .832) within this study provide confidence in the reliability of the author's data collection. Therefore, new tentative zones were created with the raw data so that each participant landed in a Low/Average/High category for each subfactor: Impunity, Audacity/Boldness, and Adroitness. Table 2 displays the new zones based on the raw data in this study. These categories correlate to the continuum described earlier in Fig. 2 (see also Appendix 4 for the author's raw-score distributions for Total IBI and for the subfactors of Impunity, Audacity/Boldness, and Adroitness; Appendix 5 then lays out the ordinal categorical distribution for Total IBI across the study participant population and the distribution by gender).

Table 2: Participant Study IBI Zones

Scale	Low	Average (+/- 1.5 SD)	High
Total IBI	<42.1	42.1-67.7	>67.7
Impunity	<35.0	35.0-67.6	>67.6
Audacity/Boldness	<39.4	39.4-73.6	>73.6
Adroitness	<43.2	43.2-77.4	>77.4

Mixed-Method Research Results: Risk Propensity Influences Decisions and Behavior

Correlation Tests Show Gender Differences and Links Between Total IBI/ Decisions and Audacity Subfactor/Use of High Confidence Statements

Several correlation tests conducted by the author elicited connections to varying degrees of statistical significance. Independent t-tests compared gender responses and differences, multiple Spearman Rank correlation tests compared variables and Likert scale responses, and a repeated measures analysis of variance (ANOVA) test using a briefing scenario evaluated the differences in the study participants' responses when the impact of their "briefing" was known versus unknown.

The Independent t-tests compared gender differences in Total IBI scores and each IBI subfactor (Impunity, Audacity/Boldness, Adroitness), indicating:

- A significant difference in Total IBI between Males (M=55.6, SD=8.46) and Females (M=51.8, SD=8.28); t(df)=2.47**,** p=0.014.
- A significant difference in the Impunity subfactor between Males (M=51.9, SD=10.65) and Females (M=47.3, SD=10.64); t(df)=2.44**,** p=0.016.
- No significant difference in the Audacity/Boldness subfactor between Males (M=57.0, SD=11.19) and Females (M=54.6, SD=12.07); t(df)=1.14**,** p=0.254.
- A significant difference in the Adroitness subfactor between Males (M=61.1, SD=11.29) and Females (M=56.8, SD=11.75); t(df)=2.06**,** p=0.040.

The Independent samples' t-test results showing that males have higher scores than females in Total IBI, Impunity, and Adroitness met expectations. Multiple studies have shown that males are more prone to take risks than females.[26] Interestingly, no significant difference in the Audacity/Boldness subfactor was detected, and this anomaly will be explored in the Findings section below.

The Spearman Rank correlation tests examined the relationship between continuous and rank-ordered (ordinal) variables and between two ordinal variables. As represented by the IBI, the independent variable exists in both a continuous variable nature using the raw scores and an ordinal nature when grouped into zones (Low, Average, High). To ensure complete analysis, the author conducted the tests using raw continuous and converted ordinal data.

The following Spearman Rank correlation test display presents Total IBI raw scores (continuous variable) and the dependent variables of Actions, Communications, and Decisions (ordinal variables).

- Correlation coefficients
- Actions (r=-0.021, n=201, p=0.614)
- Communications (r=-0.028, n=204, p=0.657)
- Decisions (r=-0.012, n=205, p=0.566)

These results indicated a nonsignificant relationship between raw IBI scores and each of the dependent variables. When the Total IBI raw scores were converted to an ordinal variable and the ordinal-to-ordinal comparison was conducted, however, a statistically significant positive correlation emerged between Total IBI and Decisions (Spearmans rho=0.136, p=0.026, see Fig. 5 below). The author acknowledges that converting continuous data to ordinal data can simplify the data. Adding this correlation to create distinct, recognizable categories for IBI, however, may produce meaningful interpretations for an intelligence professional, so the author presents both for transparency and further discussion in the Findings section below (see Appendix 6 for more details on the correlation between Total IBI and the Decisions variable among study participants).

Figure 5. Spearman Rank Correlation Matrix: IBI (Independent Variable) to Dependent Variables

Correlation Matrix

		Total IBI CG L, Avg, H - LowAvgHigh
Total IBI CG L, Avg, H - LowAvgHigh	Spearman's rho	—
	p-value	—
	N	—
Action Variable Ordinal	Spearman's rho	0.055
	p-value	0.218
	N	201
Comms Variable Ordinal	Spearman's rho	0.084
	p-value	0.116
	N	204
Decision Variable Ordinal	Spearman's rho	0.136 *
	p-value	0.026
	N	205

Note. H_a is positive correlation

Note. * p < 0.05, ** p < 0.01, *** p < 0.001, one-tailed

In addition to the Spearman Rank correlation tests on the variables, several additional Spearman tests to examine the relationship between Total IBI and Likert Scale Questions from part 3 of the study participants' survey indicated correlations. These questions asked the participants to self-report how strongly they agreed or disagreed with the following statements:

- I spend significant time working on Alternatives (Hypotheses, Options, Explanations, Courses of Action, Recommendations).
- Moderate Confidence Statements are helpful.
- I am comfortable using the FULL SPECTRUM of degrees of likelihood.
- My role as an intelligence professional is to reduce uncertainty for decisionmakers/operators.
- It is essential to be bold in making analytic judgments.
- I am comfortable briefing intelligence with a High Confidence statement and an almost certain (95–99 percent) likelihood.
- I am most comfortable briefing intelligence with a Moderate Confidence statement and an unlikely to likely (20–80 percent) likelihood.

Similar to the previous Spearman correlations, the author conducted these tests using the raw IBI scores (Fig. 6) and the ordinal IBI (Fig. 7).

Figure 6. Correlation Matrix: IBI Raw/Likert Questions

Correlation Matrix

		Total Invincibility Raw
Total Invincibility Raw	Spearman's rho	—
	p-value	—
	N	—
I spend time on alternatives - Likert conversion	Spearman's rho	0.108
	p-value	0.061
	N	205
Moderate confidence statements coded	Spearman's rho	0.006
	p-value	0.467
	N	205
Comfortable using full spectrum likelihood - Likert conversion	Spearman's rho	0.129 *
	p-value	0.032
	N	205
My role is to reduce uncertainty - Likert conversion	Spearman's rho	0.038
	p-value	0.296
	N	205
It is essential to be bold - Likert conversion	Spearman's rho	-0.048
	p-value	0.755
	N	205
Comfortable briefing High/High - Likert conversion	Spearman's rho	0.046
	p-value	0.255
	N	205

Note. H_a is positive correlation

Note. * p < 0.05, ** p < 0.01, *** p < 0.001, one-tailed

Figure 7. Correlation Matrix: IBI (Low, Average, High)/Likert Questions

Correlation Matrix

		Total IBI CG L, Avg, H - LowAvgHigh
Total IBI CG L, Avg, H - LowAvgHigh	Spearman's rho	—
	p-value	—
I spend time on alternatives - Likert conversion	Spearman's rho	0.102
	p-value	0.073
Moderate confidence statements coded	Spearman's rho	0.027
	p-value	0.352
Comfortable using full spectrum likelihood - Likert conversion	Spearman's rho	0.092
	p-value	0.096
My role is to reduce uncertainty - Likert conversion	Spearman's rho	-0.026
	p-value	0.643
It is essential to be bold - Likert conversion	Spearman's rho	0.026
	p-value	0.358
Comfortable briefing High/High - Likert conversion	Spearman's rho	0.027
	p-value	0.350

Note. H_a is positive correlation

Note. * p < 0.05, ** p < 0.01, *** p < 0.001, one-tailed

Moreover, in a test of Hypothesis 4 (High Audacity/Boldness subfactor scores correlate to participants' use of the extreme end of the Likelihood and Confidence scales), a Spearman rank correlation test with IBI subfactor Audacity/Boldness and two survey questions asking participants how frequently they used the *High* end of the Likelihood scale and *High* Confidence statements showed a statistically significant positive correlation between Audacity/Boldness raw scores and the frequency of use of High Confidence statements (Spearman's rho=0.167, p-value=0.017). Nonetheless, no statistically significant correlation between this subfactor and the use of the high end of the Likelihood scale (Spearman's rho=0.111, p-value=0.114) was determined.

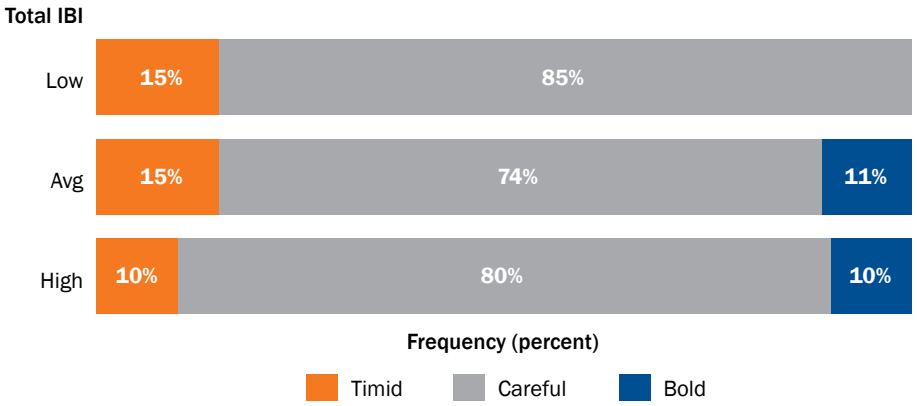
Last, a repeated measures ANOVA test compared the participants' responses on comfort levels in briefing High Likelihood/High Confidence intelligence when they knew the *briefing factor* (for example, the outcome of lives saved or lost, and money saved or lost following a scenario-specific briefing) against briefing when they did not know the outcome. The repeated measures ANOVA test indicated a statistically significant difference in the study participants' comfort level when they knew the briefing factor compared to when they did not know the outcome (F (1, 204)=7.240, p=0.008). Although the tests showed that the briefing-factor description (people's lives or money) did not matter, the *consideration* of the briefing factor was statistically significant (F (1, 204)=7.240, p=0.008, η^2p=0.034).

Survey Plots Illustrate Risk Propensity's Impact on Behavior

In addition to the correlations, survey-plot data provide trends and comparisons worth discussing in the context of how risk propensity impacts the behavior of intelligence professionals. These survey plots do not meet statistical thresholds but can display data and offer patterns that provide insights into the participants' behavior not seen in the correlation data.

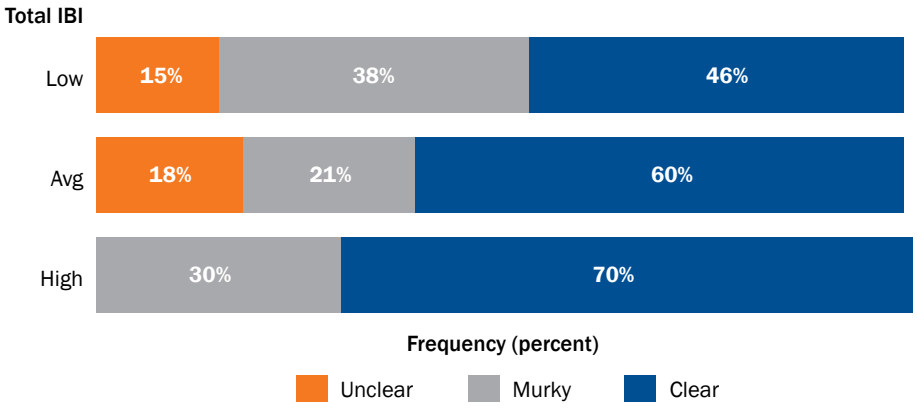
In contrast to Fig. 5 illustrating the Spearman correlations, Figs. 8–10 display the survey plot data within the same variables. These plots show that, in the Actions variable, participants coded as Bold are found only in the Average/High IBI categories and those coded as Timid are most prevalent in the Average/Low IBI categories. In the Communications variable, participants coded as Unclear are found only in the Average/Low IBI categories. In the Decisions variable, participants coded as Indecisive are found only in the Low IBI category.

Figure 8. Survey Plot: Actions Variable and Total IBI



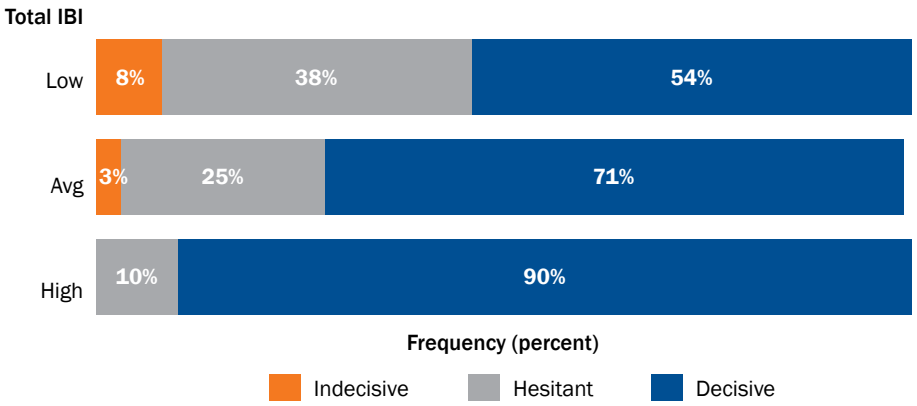
Note: Because jamovi rounds the Frequency calculations to the nearest whole percent, not all rows may equal 100 percent.

Figure 9. Survey Plot: Communications Variable and Total IBI



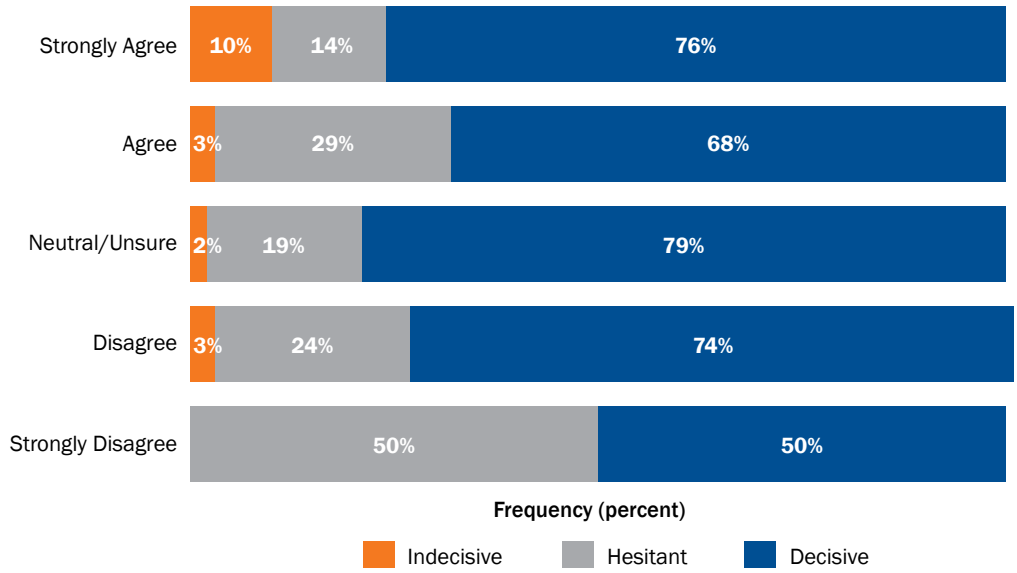
Note: Because jamovi rounds the Frequency calculations to the nearest whole percent, not all rows may equal 100 percent.

Figure 10. Survey Plot: Decisions Variable and Total IBI



Note: Because jamovi rounds the Frequency calculations to the nearest whole percent, not all rows may equal 100 percent.

Figure 11. Decisions Variable / "I Spend Time on Alternatives."

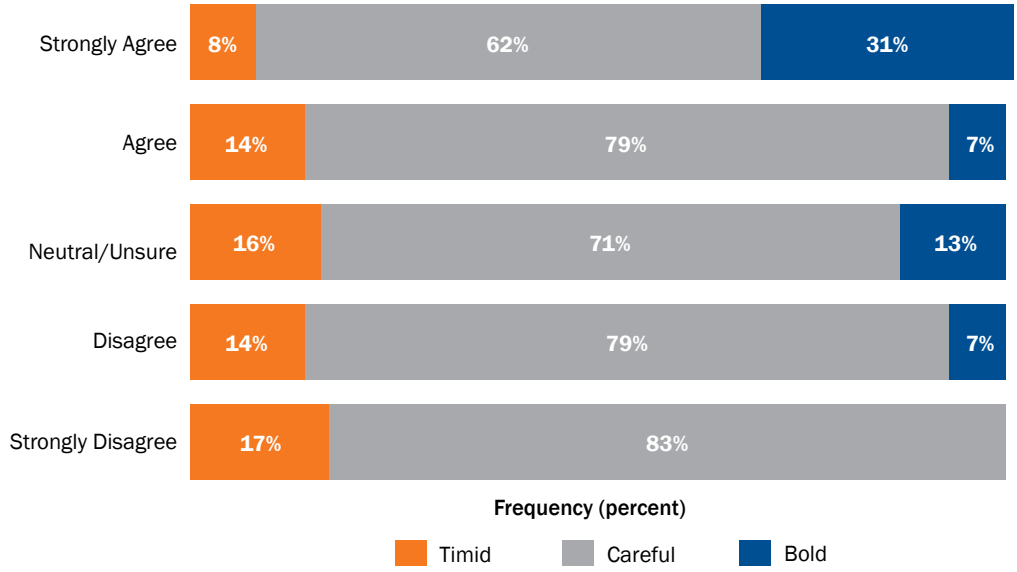


Note: Because jamovi rounds the Frequency calculations to the nearest whole percent, not all rows may equal 100 percent.

Again, although survey plot data do not provide statistical significance, the following plots displaying the dependent variables against several Likert scale questions highlight areas indicating the link between risk propensity and behavior. Plotting the Decisions variable within the Likert Scale question, "I spend time on Alternatives" (Fig. 11), shows that study respondents who had been coded as Indecisive, based on their responses to the IBI questionnaire, were much more likely to spend time on alternative hypotheses or courses of action.

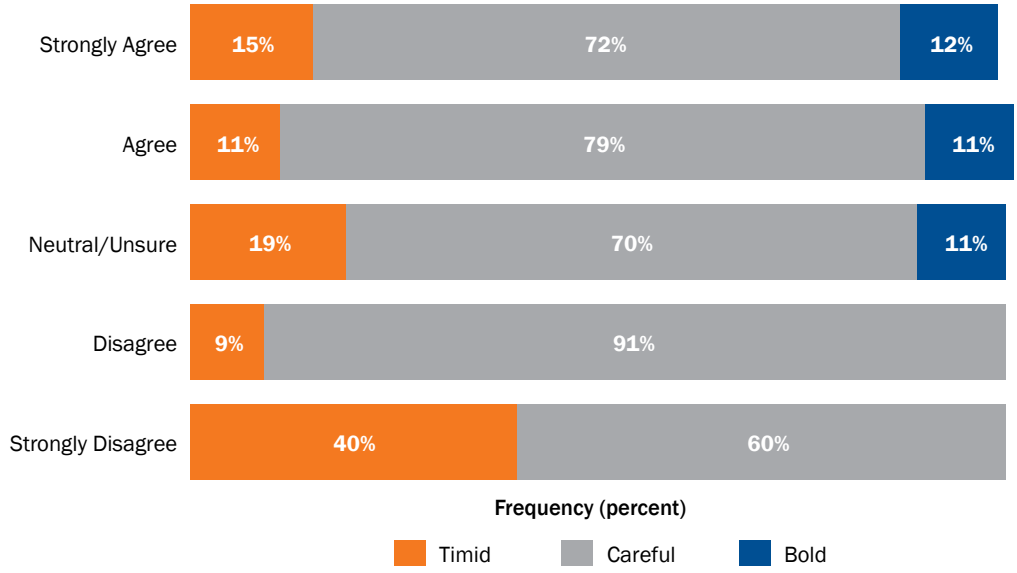
Plotting the Actions variable within the Likert Scale question, "It is essential to be Bold" (Fig. 12), shows that, not surprisingly, the Bold-coded study respondents had the highest percentage in the Strongly Agree category.

Figure 12. Actions Variable / "It Is Essential To Be Bold."



Note: Because jamovi rounds the Frequency calculations to the nearest whole percent, not all rows may equal 100 percent.

Figure 13. Actions Variable / "I Am Comfortable Briefing High Confidence and High Likelihood."

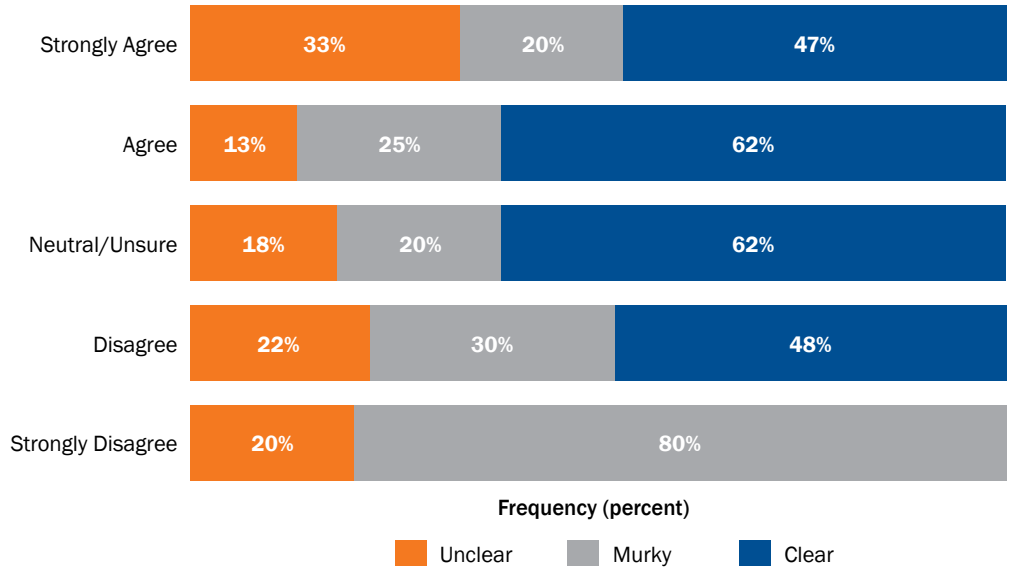


Note: Because jamovi rounds the Frequency calculations to the nearest whole percent, not all rows may equal 100 percent.

Plotting the Actions Variable within the Likert Scale question, "I am comfortable briefing High confidence and High likelihood" (Fig. 13), shows that Timid-coded respondents were more likely to be uncomfortable.

Plotting the Communications variable within the Likert Scale question, "Moderate confidence statements are helpful" (Fig. 14), shows that Unclear-coded respondents were more likely to believe that Moderate Confidence statements are helpful.

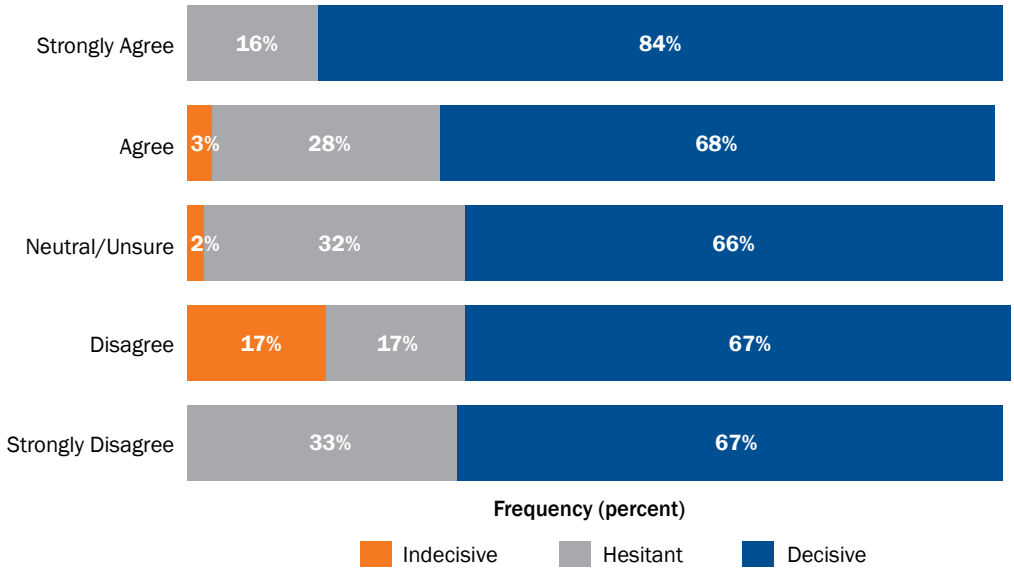
Figure 14. Communications Variable / "Moderate Confidence Statements Are Helpful."



Note: Because jamovi rounds the Frequency calculations to the nearest whole percent, not all rows may equal 100 percent.

Plotting the Decisions variable within the Likert Scale question, "I am comfortable using the Full Spectrum of Likelihood" (Fig. 15), shows that Indecisive-coded respondents were most likely to be uncomfortable with briefing their findings as Likelihood declines down the full spectrum.

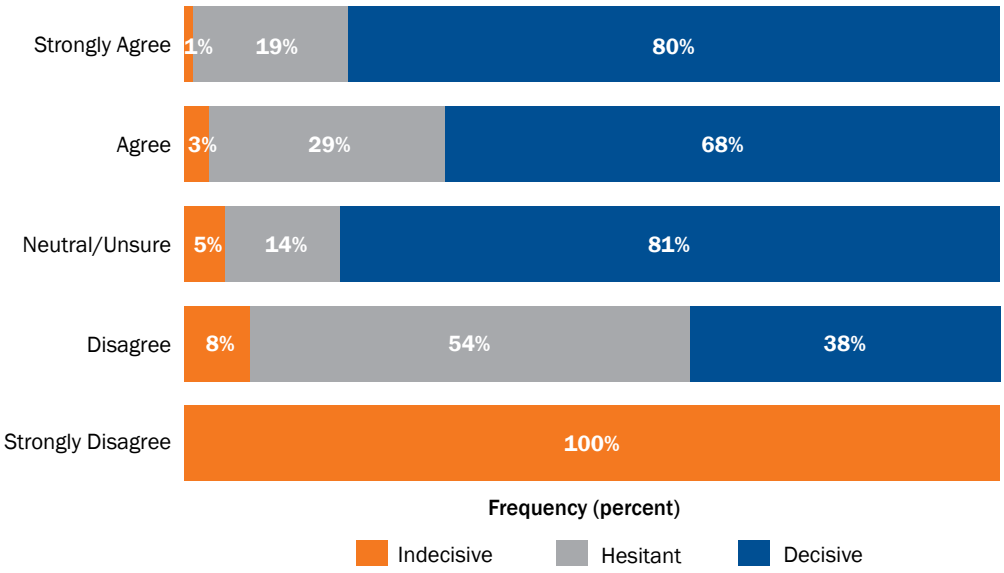
Figure 15. Decisions Variable / "I Am Comfortable Using the Full Spectrum of Likelihood."



Note: Because jamovi rounds the Frequency calculations to the nearest whole percent, not all rows may equal 100 percent.

Last, plotting the Decisions variable within the Likert Scale question, "My role is to reduce uncertainty" (Fig. 16), shows that Indecisive-coded respondents did not think they should reduce uncertainty. Since Total IBI correlates to the Decisions variable, this also means that the lower one's IBI score, the greater the likelihood of being indecisive and believing one's role is not to reduce uncertainty.

Figure 16. Decisions Variable / "My Role Is To Reduce Uncertainty."



Note: Because jamovi rounds the Frequency calculations to the nearest whole percent, not all rows may equal 100 percent.

Thematic Analysis Reveals Indifference to Likelihood and Confidence Scales

To measure study participants' buy-in to the Likelihood and Confidence scales that intelligence professionals are encouraged to apply to their judgments, the author conducted thematic analysis on open-ended questions asking participants for their opinions of these two scales. Three themes emerged under their Likelihood-scale opinions and two emerged under their Confidence-level opinions, collectively indicating the respondents did not value such probability language (Table 3).

Table 3: Thematic Analysis

Likelihood-Scale Themes	Confidence-Scale Themes
1. "It's Okay" 2. "Only If" 3. "Misunderstood"	1. "It's Okay" 2. "It Depends"

The study participants' opinions of both scales were similar. Most respondents had a mediocre opinion at best, and the others caveated the value with conditions. The mediocre opinions fall into the first "it's okay" theme. The "only if" and "it depends" themes represent the caveated nature of the second largest portion of responses, while the smallest portion—the "misunderstood" theme—indicates a concern for subjective interpretation. The author did not correlate this information to any IBI data.

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Findings: Insights Into Risk Propensity's Impact on Intelligence Professionals

In exploring the impact of risk propensity on intelligence professionals' recommendations up the chain of command and assessments that inform policymakers, particularly within informal contexts including impromptu briefings, this research study tested four hypotheses that yielded two statistically significant conclusions: the IC participants' risk propensity correlated to the Decisions they made, and their High Audacity/Boldness levels directly influenced their Confidence judgments (Fig. 17). Using the IBI provided multiple-factor insight and a useful examination of risk tendency through Invincibility and the subfactors of Impunity, Audacity/Boldness, and Adroitness.

Figure 17. Summary Matrix of Hypotheses Testing Results

BEHAVIORS	
	H1: Total IBI positively correlates to intelligence professionals' actions *H1 null: Total IBI does not correlate to Intelligence professionals' actions* **Data trend toward correlation but do not reject the Null**
	H2: IBI positively correlates to intelligence professionals' communications *H2 null: IBI does not correlate to intelligence professionals' communications* **Data trend toward correlation but do not reject the Null**
	H3: IBI positively correlates to intelligence professionals' decisions *H3 null: IBI does not correlate to intelligence professionals' decisions* ***Statistically significant: Null is rejected, IBI positively correlates to Decisions***
	H4: High Audacity/Boldness subfactor scores correlate to participants' use of the extreme end of the Likelihood and Confidence scales *H4 null: High Audacity/Boldness subfactor scores do not correlate with participants' use of the extreme end of the Likelihood and Confidence scales* **Statistically significant for Confidence scales only**

The unique nature of this study lies in its focus: the examination of a community specifically trained to mitigate biases—that is, a population of intelligence professionals for whom objectivity is paramount. Mitigating biases is extremely difficult, however, especially during System 1 (highly suggestive) moments. Moreover, why do some fields, such as economics and finance, find risk propensity a critical area of study, while in the IC, risk discussions center on the intelligence *issue* versus the intelligence *professionals* who put it all together? In a world where uncertainty lies at its core, the IC seems to have ignored a vital issue of risk preferences within the workforce. Four key findings from this study provide food for thought on taking risk propensity into greater account within the intelligence field by focusing on its impact on the intelligence professionals themselves:

Key Finding 1: Although the Spearman Rank correlation tests failed to reject most null hypotheses, the threshold for rejection was not met for the Decisions variable, which positively correlated with the study participants' Total IBI results. This finding indicates that the more Invincible individuals believe themselves to be, the more likely they are to take risks and the more decisive they tend to be. Additionally, the higher individuals scored on the Audacity/Boldness subfactor, the more likely they were to use High Confidence terminology.

> *Discussion:* Although the finding that *Decisions* was the only variable statistically correlated to risk tendencies was unexpected, the survey plot trends described in the previous section do support the study's hypotheses. While survey-plot data do not meet quantitative statistic thresholds, they provide valuable qualitative insight for this study. Figs. 8–10 showed trends that align with the hypotheses and warrant further research. The coding of behavior into Actions, Communications, and Decisions could become more elaborate with additional time and resources to complete a more in-depth participant profile. The author chose to keep the survey questions low in quantity to ensure more participants were willing to complete the survey. Even so, 39 respondents completed only the IBI portion of the survey and did not answer the questions from which their Actions, Communications, and Decisions profile was derived. In addition, the survey questions were particular to the IC component where all of this study's participants serve, so—if more IC components are to be evaluated—new questions must be developed to replicate the study across all 18 IC elements.

Key Finding 2: Gender plays a significant role in risk profiles. The study's independent t-tests revealed that Females tend to score lower in Total IBI (overall risk orientation), Impunity (higher fear of punishment), and Adroitness (less agile). Interestingly, gender in the Audacity/Boldness subfactor was not statistically significant.

> *Discussion:* Although not a primary objective within the research question and the hypotheses, gender differences emerged through the demographic data comparisons and are worthy of note. The differences found in the Independent t-tests in this study align with previous studies on risk tendencies. Specifically, females appear to be generally more risk-averse than males. More in-depth research across additional IC elements and structured interviews could expand comprehension of why the Adroitness subfactor was an outlier among the other subfactors.

Key Finding 3: The studied intelligence professionals' comfort level in a briefing scenario showed a statistically significant difference when the impact of their assessment or recommendation was known. The repeated measures ANOVA test indicated increased comfort levels when these professionals knew that lives

or significant financial stakes were at risk. This participant sample was much more comfortable providing intelligence briefings when lives or money were at stake.

> *Discussion:* Key Finding 3 is unexpected. In the repeated measures ANOVA test, the author asked survey participants the same question three times. The first time, she asked them how comfortable they were briefing High Confidence or High Likelihood intelligence findings; when asking the same question, a second and third time, she added the context of "knowing it could save or cost lives" and "knowing it could save or lose millions of dollars." Given the nature of intelligence and the respondents' role with their customers, a truly objective approach was anticipated, with no change among the three responses. The results showed, however, that the impact mattered. This finding contradicts the results from financial-risk studies that show people become more risk averse when the stakes are higher.[27] Nonetheless, no correlation emerged between the briefing factor change and the participants' risk propensity, which then presents the question of the elasticity of risk propensity. This question of elasticity is unknown and deserves further research. Within the intelligence field, it would be worth studying what drives intelligence professionals to become more prone to risk tolerance or more risk averse. Killgore's research suggests that a military member probably will have an increased risk propensity post-deployment.[28] A study on intelligence professionals in a post-intelligence failure environment could shed additional light on the elasticity of risk propensity.

Key Finding 4: Intelligence professionals have low opinions of the Likelihood and Confidence scales.

> *Discussion:* This finding confirmed ongoing debate among intelligence professionals about the usefulness of Likelihood and Confidence scales, which are intended to assure the decisionmaker of the soundness of the analyst's perspective. Intelligence professionals, however, rarely explain these scales to their audience; it is up to the customer to interpret or seek the correct interpretation—creating room for ambiguity. The nuance of probability language disparity is not new. Intelligence studies often refer to former intelligence officers Katherine Hibbs Pherson and Randall Pherson's *Critical Thinking for Strategic Intelligence,* which highlights Sherman Kent's 1964 study on differences in perception of probability language.[29, 30] Many similar studies have demonstrated the consistency of this probability language disparity.[31] Additional research should test the correlation between probability language perceptions and risk propensity.

Digging Deeper: Invincibility Belief Subfactors

Although not the primary focus of this study, the IBI subfactors provide valuable insights for IC leaders, specifically regarding workforce trends and workplace culture and climate. Two defining features emerged within this sample population: they are overwhelmingly vulnerability-oriented, but they also show high mental dexterity.

The Impunity subfactor speaks to a fear of punishment (as seen earlier on the scale in Fig. 2). Low impunity scores, as found in this sample population, could indicate a low level of psychological safety—raising

concerns about possible workplace climate and culture issues. Impunity scores do not unveil a root cause for fear of punishment within the workforce, but they could provide a reliable starting point for conversations among leaders on the topic of psychological safety. Additionally, since the Impunity subfactor is part of Total IBI, one's work environment could be an influencing factor in how one views risk.

The Adroitness subfactor speaks to agility versus ignorance (as seen on the scale in Fig. 2). High Adroitness scores found in this study indicated a tendency toward mental agility and perhaps a highly trained workforce. The combination of these two subfactors could provide leadership with a cautionary perspective: despite high self-perception of their skills, study participants' natural tendency was to err on the side of caution.

The subtleties within the subfactors are delicate and, while interesting, cannot explain causal factors. Further research is warranted to determine if the tendencies for caution and a fear of punishment are replicated across intelligence agencies.

Conclusion: Implications and Recommendations

Intelligence is a world of risky business where the only thing that is certain is uncertainty. Risk propensity, as measured by the IBI, was seen to be most influential in the decisiveness of the intelligence professionals who participated in this study. The research also revealed that risk propensity trended toward influencing the participants' clarity of communication and boldness of action. All three of these behavioral components are essential when dealing with uncertainty, as the more decisive, clear, and bold intelligence professionals can be in providing intelligence for the decisionmaker, the more likely they can persuade the decisionmaker of the soundness of their recommendations or assessments.

Most of those surveyed did not value the Confidence or Likelihood scales, despite their ubiquitous use in IC analysis. Argumentation experts say that hedging a claim or providing a qualifier can strengthen the argument.[32] Perhaps the surveyed intelligence professionals placed greater value in the importance of persuasion. The survey further indicated that the Audacity/Boldness subfactor correlated to use of the Confidence scale, meaning that the higher the score in this subfactor, the more likely the study participants were to use High Confidence statements. This correlation, however, does not explain their low opinion of the Confidence and Likelihood scales.

These findings highlight a distinctive cognitive diversity element within one's risk propensity. Understanding how risk propensity affects intelligence professionals is only part of this story. Each IBI subfactor can contribute to an improved understanding of the individuals who comprise the IC workforce and how a mix of intelligence professionals across the Impunity, Audacity/Boldness, and Adroitness scales might collaborate and constructively challenge one another to strengthen IC analysis and its communication to decisionmakers. The IC strives for diversity at all levels; therefore, understanding a cognitively diverse element dealing with the core of uncertainty in intelligence cannot be ignored.

Recommendations for the Intelligence Community

Improve awareness of individual differences across the risk-propensity spectrum. Provide training on understanding and appreciating how risk propensity and individual biases can impact how individuals communicate, make decisions, and take actions, especially in informal interactions where there is no time for bias-mitigating protocols. Establish and keep metrics on how each team member uses the Likelihood

and Confidence scales and assess these features' practical use and value in briefings, with the goal of improving awareness within oneself and in how the team operates. Businesses see the value in risk personality assessments as a method to enhance team performance and to improve existing processes,[33] and the IC would be wise to apply this workforce capability to intelligence endeavors, where risk plays a vital role.

Intelligence agencies could gain valuable insights by taking the first step to better understanding their workforce. Baselining individuals to comprehend their risk propensity could enhance team dynamics and help prevent intelligence failures. Intelligence failures often happen because no one questions the analysis. The dispersion of risk-takers across the workforce and when establishing a team could ensure a balanced approach to challenging judgments and generating clearer, more direct, and bolder recommendations and assessments that suitably persuade decisionmakers.

Implement practices for cognitive diversity, despite the many challenges compared to implementing demographic diversity. During the past two decades, the IC has made dramatic changes with its demographic diversity initiatives, even as former IC officer John Gentry has pointed out some flaws within the IC's demographic diversity strategy.[34] Gentry argues that the initiatives do little to improve operational intelligence.[35] A cognitive diversity approach has its own challenges, requiring delicate policies and procedures to ensure fairness and emphasize operational intelligence improvement and inclusion. Creating cognitive diversity is a vital component to improving operational intelligence. Specifically, the IC must consider risk propensity within a cognitive diversity initiative.

While this study acknowledges the challenges of creating a diverse workforce, these recommendations aim to include all types of risk-oriented professionals, with emphasis on strengthening awareness of the myriad characteristics that build risk propensity within the individual and across the workforce. That said, the IC's need for novel—indeed, unconventional—approaches to 21st century national security concerns argues for purpose-built teams of cognitive risk-takers.

Create a safe space for risk-taking. In addition to fostering cognitively diverse and balanced teams, the IC should consider creating a safe space for cognitive risk-takers. The creation of "red teams" based on high risk propensity could enhance red team analysis and provide new techniques for innovation and leadership. The Center for Strategic and International Studies highlights the IC's risk-averse culture as a critical challenge to moving forward.[36] The IC must balance fear with results. Providing a safe space for risk-taking could be an important step toward addressing this challenge.

Limitations and Future Research Opportunities

This study was limited to one risk-propensity survey and one intelligence element within the IC. Additional research, including more agencies and different types of risk-personality tests, could provide more insight into the value of risk propensity in the intelligence field. Identifying and measuring the differences in risk propensity across the IC—as well as the levels of understanding and value placed on risk propensity among IC leaders and customers—would provide additional comparisons worth studying.

Appendix 1: Survey Participant Demographics

All of the survey participants in this study were intelligence professionals serving in the USCG. Sample size breakdowns are as follows:

- Total Sample size **n=205**
- Gender (3 preferred not to answer)
  - Female (n=38)
  - Male (n=164)
  - 19 percent female, 81 percent male (n=202)
- Age (1 preferred not to answer)
  - "18–34" (n=70)
  - "35–55+" (n=134)
  - 34 percent "younger;" 66 percent "older" (n=204)
- Years of Service
  - 10 years and under (n=109)
  - 11+ years (n=96)
  - 53 percent lower experience; 47 percent higher experience

Data collection provided a representative sample size based on demographic data provided by this IC element.

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Appendix 2: Sample Questions From the Survey Participants' Invincibility Belief Index Test

Each scenario presents a situation and asks a question about the chance or likelihood that you would experience a particular outcome. For each one, think about how likely that outcome would be for YOU in that situation. Do NOT worry about how most people would do in a particular situation—just think about the chance that a particular outcome would happen to YOU in that situation.

Select the percent chance (from 0 to 100 percent in 10-percent increments) that best represents the probability that the outcome would happen to YOU:

1. You arrive 25 minutes late for a big job interview. What is the probability (0 percent to 100 percent) that YOU will get the job?
2. Regardless of your moral convictions, if you were to shoplift a pair of $50 sunglasses from a chain drug store, what is the probability that YOU could get away with it without being caught?
3. While on vacation, you meet up with a stranger asking for help. Although the story the stranger tells you is heart-wrenching and he seems very sincere, you are aware that he may just be a con artist trying to scam you. If the stranger truly is a con artist, what is the probability YOU will end up being scammed out of some of your money?
4. Your company has a strict policy forbidding the removal of computer equipment from the work premises. However, you have a big project due that can only be completed if you "borrow" a company laptop computer over the weekend. What is the probability that YOU could secretly remove the computer for the weekend and return it to work on Monday without ever being caught?
5. You enter a competition in an arena in which you are particularly talented. What is the chance that YOU will ultimately win the competition?

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Appendix 3: Participant Survey on Analytic Style, Preferences, and Decisionmaking Tendency

Consider the following hypothetical scenarios. Please read and respond based on the information provided:

1. A coworker, whom you find credible, told you this morning that they witnessed John Doe scan classified information into the unclassified scanner and email it to his personal Gmail. You decide to notify your supervisor.

   What recommendation do you provide your supervisor?

   - Strongly recommend referral to Counterintelligence
   - Recommend referral to Counterintelligence
   - Neutral
   - Do not recommend referral to Counterintelligence
   - Strongly do not recommend referral to Counterintelligence

   Please explain your decision.

2. You are the intelligence officer onboard the cutter. Your cutter just interdicted **54** migrants. You confirmed the number of migrants on deck to write a report. While you are sleeping after mid-watch, the cutter transferred the migrants in the early morning and began a transit back home. You wake up several hours after the transfer and check the ship's logs, which indicate **53** migrants transferred. After checking with the watch officer in charge of the transfer and confirming that the ship's logs are correct,

   What recommendation to the CO do you make? Or what action, if any, do you take?

3. You just listened to a practice run-through of a flag-level brief. You personally believe the brief is absolutely TERRIBLE in all aspects. The briefer, whom you do not know personally, walks up to you after the run-through and asks, "So what do you think? Is that acceptable for tomorrow?"

Do you say the brief is:

- Totally Unacceptable
- Slightly Unacceptable
- Neutral/or tell member you prefer not to comment
- Slightly Acceptable
- Perfectly Acceptable

Please explain your decision.

Appendix 4: Total IBI and Subfactor Raw-Score Distributions for Study Participants

The author used the processing methodology provided by Killgore to administer and score the study participants' IBI results. Figs. 18–21 display raw-score distributions for Total IBI, Subfactor 1 (Impunity), Subfactor 2 (Audacity/Boldness), and Subfactor 3 (Adroitness).

Figure 18. Total IBI Raw-Score Descriptives and Distribution

Descriptive Statistics

	Location		Spread					Counts	
	M	Median	s	Minimum	Maximum	25th percentile	75th percentile	N	Missing
Total Invincibility Raw	54.9	55.0	8.52	25.5	76.5	50.5	60.5	205	0

Distribution

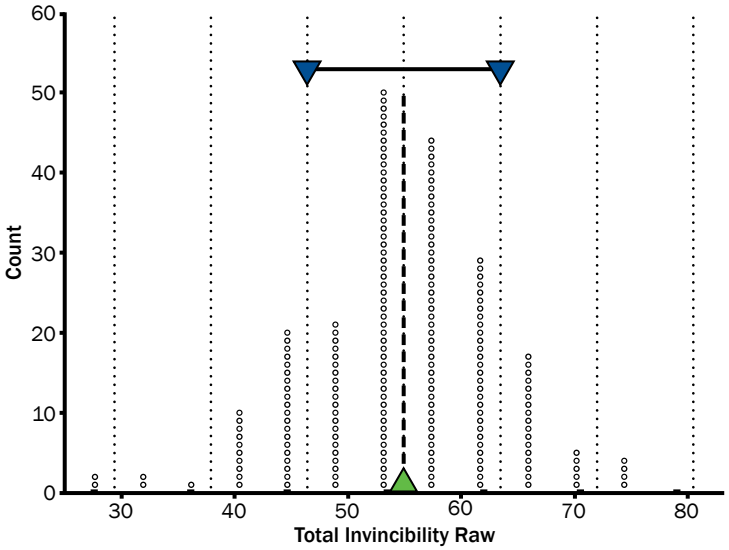


Figure 19. Subfactor 1 (Impunity) Raw-Score Descriptives and Distribution

Descriptive Statistics

	Location		Spread					Counts	
	M	Median	s	Minimum	Maximum	25th percentile	75th percentile	N	Missing
Impunity Raw	51.1	51.4	10.7	18.6	77.1	44.3	60.0	205	0

Distribution

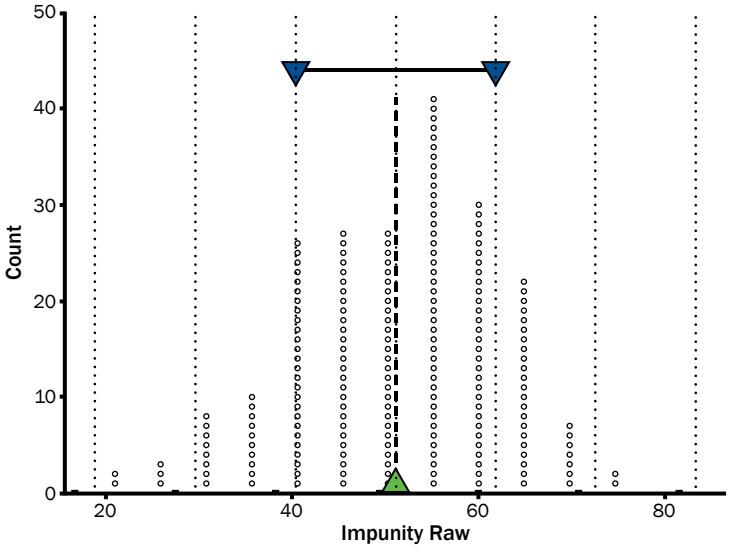


Figure 20. Subfactor 2 (Audacity/Boldness) Raw-Score Descriptives and Distribution

Descriptive Statistics

	Location		Spread					Counts	
	M	Median	s	Minimum	Maximum	25th percentile	75th percentile	N	Missing
Audacity/Boldness Raw	56.5	55.7	11.4	22.9	90.0	48.6	64.3	205	0

Distribution

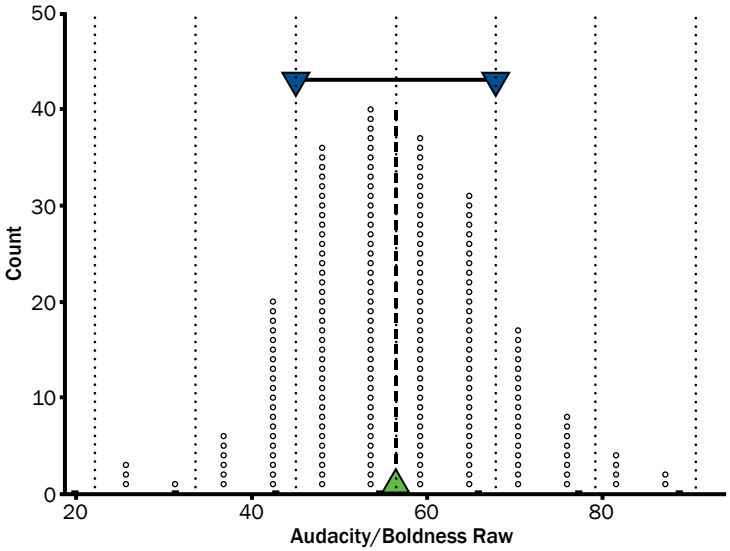
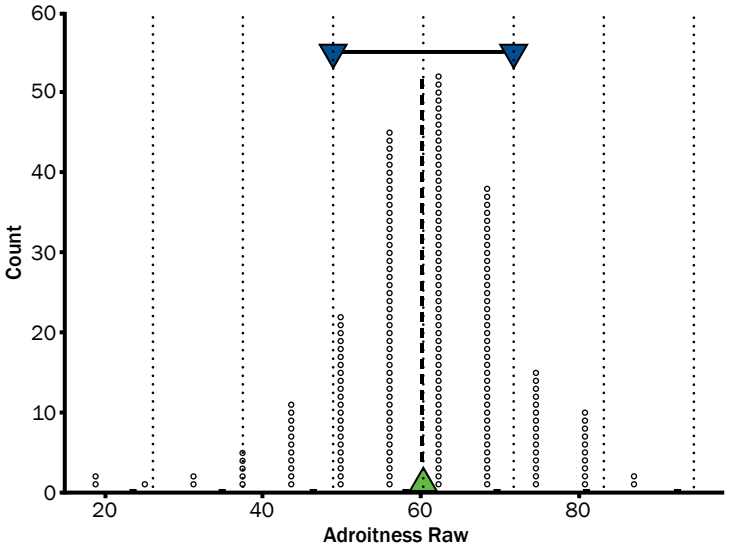


Figure 21. Subfactor 3 (Adroitness) Raw-Score Descriptives and Distribution

Descriptive Statistics

	Location		Spread					Counts	
	M	Median	s	Minimum	Maximum	25th percentile	75th percentile	N	Missing
Adroitness Raw	60.3	61.4	11.4	15.7	90.0	54.3	67.1	205	0

Distribution



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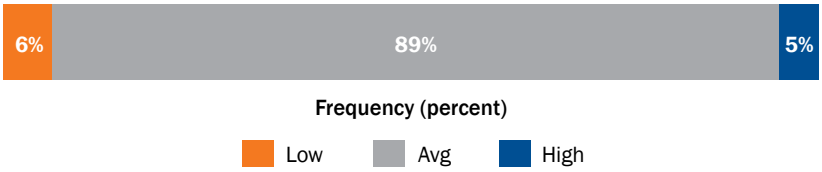
Appendix 5: Total IBI Ordinal Categorical Distributions for Study Participants, Including by Gender

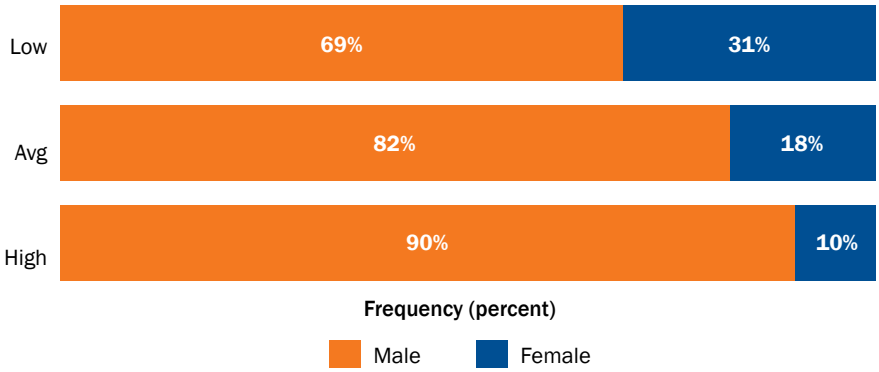
Based on the categorical zones shown in Table 2 and the raw-score distribution for Total IBI, the author coded the study participants' raw scores into ordinal categories (Fig. 22) and also plotted them by gender (Fig. 23).

Figure 22. Ordinal Categorical Distribution for Total IBI (Low, Average, High)



Note: Because jamovi rounds the Frequency calculations to the nearest whole percent, not all rows may equal 100 percent.

Figure 23. Ordinal Categorical Distribution for Total IBI (Low, Average, High) by Gender



Note: Because jamovi rounds the Frequency calculations to the nearest whole percent, not all rows may equal 100 percent.

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Appendix 6: Ordinal Logistic Regression for Spearman Rank Correlation Test

To account for the ordinal conversion in the Spearman Rank correlation test, the author conducted an ordinal logistic regression (Fig. 24) on the Total IBI (Low, Average, High) to the Decisions dependent variable since this variable shows significance in the Spearman correlations. The overall model test p-value was .050, indicating that the model was statistically significant. The model fit measures showed that the model had a relatively good fit. The model-specific results showed that the coefficient for Total IBI (ordinal) was .906 with a p-value of .055, indicating there was a positive relationship between Total IBI (ordinal) and the Decisions variable (ordinal). Although the model fit was statistically significant, the correlation was just shy of statistically significant.

Figure 24. Ordinal Logistic Regression (IBI/Decisions)

Model Fit Measures

				Overall Model Test		
Model	**Deviance**	**AIC**	**R^2 McF**	**χ^2**	**df**	**p**
1	285	291	0.0133	3.83	1	0.050

Note. The dependent "Decisions" variable has the following order:
Indecisive | Hesitant | Decisive

Model Coefficients - "Decisions" Variable

Predictor	**Estimate**	**SE**	**Z**	**p**
Total IBI CG L, Avg, H - LowAvgHigh	0.906	0.472	1.92	0.055

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