

Identifying How Sleep Shapes Human Intelligence Gathering and Diagnosticity

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Given ubiquitous domestic and international threats, achieving national security and ensuring safety of individuals is a primary objective of both domestic and foreign policy (e.g., diminishing the likelihood and fallout from terrorist attacks). The U.S. Intelligence community plays a critical role in supporting this objective as it is responsible for collecting, analyzing, and disseminating information essential to the prevention and mitigation of terrorist attacks. Human Intelligence (HUMINT, gathering of information via inter-personal contact) plays a key role in this effort as interrogations or conversations with suspects, witnesses, and knowledgeable others almost always play a critical role in identifying future risk of an attack, stopping ongoing attacks, and preventing active plots. HUMINT is especially critical during “ticking time bomb” scenarios where obtaining detailed and accurate information from individuals that are often un-cooperative can make a difference between life and death (as in capture of “El Chapo” Guzman, a leader of an extremely deadly and wide-spread criminal enterprise; Mathis-Lilley, 2014).

Human intelligence collected via inter-personal contact typically involves *debriefing* largely cooperative subjects (e.g., military police, diplomats) or *interrogating* less cooperative (or outwardly hostile) targets (e.g., terrorism suspects, co-conspirators, or witnesses). All of these efforts involve information gathering through social interaction, which means that their results directly depend on the psychological make-up and behavior of both interview subjects and their interviewers (Fein, 2006).

The Key Role of Rapport-Based Interviewing in Collecting Human Intelligence

Traditional methods utilized for interrogation of criminal, military, and clandestine targets typically involve accusatorial tactics and coercive maneuvers that presume guilt, seek to elicit confessions, and aim to reduce resistance of the subject to interviewers’ requests for information (Inbau & Reid, 1963). However, these methods mostly rely on customary knowledge, and it is only recently that the effectiveness of various interviewing techniques in eliciting information and admissions of guilt has been examined through scientific methods. This work is probably best represented by efforts of the *High-Value Detainee Interrogation Group (HIG)*, U.S. Department of Justice, 2009), an inter-office agency that involves the Federal Bureau of Investigation, the Defense Intelligence Agency, the Central Intelligence Agency, as well as other U.S. Intelligence Community agencies. In addition to their

operational mission, the HIG is leading the first unclassified scientific program of research aimed to evaluate the effectiveness of current interrogation practices and amass evidence pertinent to development of better and more efficient interviewing methods (see <https://www.fbi.gov/about/leadership-andstructure/national-security-branch/high-value-detainee-interrogation-group>).

So far, HIG has funded peer-reviewed research by leading experts which reveals the value of *rapport-based* approaches that aim to (1) establish co-operation and mutual understanding with the subject, (2) elicit information via effective interviewing skills that facilitate memory retrieval, (3) use available evidence strategically to increase disclosure or examine inconsistencies, and (4) evaluate credibility of information provided (Meissner, Kelly, & Woestehoff, 2015). Although these approaches involve multiple techniques, they generally aim to maximize the amount of relevant, verifiable, and actionable HUMINT by using motivational and cognitive interviewing techniques dependent on establishing mutual understanding. This research program reveals that, relative to traditional accusatorial approaches, rapport-based methods produce more diagnostic information by increasing the likelihood of true confessions and decreasing the likelihood of false confessions. Moreover, these methods are more likely to generate higher quality and quantity of information that can be used to detect deception and evaluate intelligence validity. For example, liars are less likely to report detailed accounts and are more likely to struggle when offering information when reporting events in reverse-order or while maintaining eye-contact (both imposing additional cognitive demands that are not problematic when simply recalling actual facts, Meissner et al., 2015).

Sleep: The Missing Consideration in Human Intelligence Gathering

Despite scientific advancements in understanding psychological consequences of various interrogation techniques and in developing methods that increase the amount and diagnosticity of information in investigative contexts, there is **a surprising and concerning lack of understanding into the role that the sleep-wake cycle and its disturbance play in gathering and evaluating HUMINT**. The purpose of this White Paper (submitted in response to the second Call for White Papers issued by The National Academies of Sciences, Engineering, and Medicine Board on Behavioral, Cognitive, and Sensory Sciences as a part of their decadal survey on social and behavioral sciences for national security) is to **identify relevant gaps in the knowledge of how sleep intersects with interrogation practices and, more importantly, to outline research priorities for identifying the role of sleep in HUMINT operations**.

Sleep is an essential biological phenomenon shared by all advanced species. In humans, sleep can be behaviorally defined as a reversible state of perceptual disengagement from—and unresponsiveness to—the environment. Modern neuropsychology reveals that wakefulness and sleep are controlled by an internal biological clock mechanism that guides most physiological activity, including daily (i.e., circadian) rhythms in body temperature, hormone levels, energy levels, vigilance, and emotion (Van Dongen & Dinges, 2003). Even more critical, sleep disruption (loss or fragmentation) creates substantial neurocognitive consequences including lowered arousal and vigilance, problems with sophisticated thinking, slower performance, lowered effort, and emotional dysregulation (Krizan & Hisler, 2016). When extreme, sleep deprivation results in fading consciousness and in entire brain areas

that reduce in neuronal activity (Krueger, Rector, Roy, Van Dongen, Belenky, & Panksepp, 2008). These scientific findings make it clear that sleep is likely to play an extremely important, yet heavily neglected, role in dealing with HUMINT.

Objective 1: Describe the nature of sleep-wake states and the extent of sleep disruption common to intelligence gathering situations

Before detailed examination of how sleep influences HUMINT operations, it is critical to empirically document the forms and prevalence of sleep-related phenomena in HUMINT gathering contexts. This is necessary insofar it will help guide more directed questions on the role of sleep in obtaining, evaluating, and efficiently disseminating HUMINT. The most pressing questions include:

- **Are there regularities in circadian sleep factors (e.g., time of day) that influence the fitness of an interview subject?**
- **Are there regularities in hemostatic sleep factors (e.g., sleep loss) that characterize HUMINT contexts?**
- **What is the prevalence and variability in sleepiness among interview subjects?**
- **How common is severe sleep disruption among interview subjects?**
- **How frequently do intelligence officers consider sleep-wake factors in their subjects?**
- **How common is sleep disruption among intelligence officers themselves? Do they believe it impacts their ability to gather HUMINT?**

Objective 2: Identify the consequences of circadian and sleep factors for quantity and quality of HUMINT

As sleep disruption is likely to be prevalent among interview subjects (e.g., a terrorist may be apprehended after multiple days of sleep loss due to evasion efforts, or his/her interview may extend into the early morning hours), it is critical to identify the impact of different *forms* (e.g., sleep loss vs. sleep fragmentation) and different *doses* of sleep disruption (e.g., sleep restriction vs. total sleep deprivation) on behavioral, cognitive, and emotional responses with direct implications for HUMINT gathering. The most pressing questions include:

- **How do circadian factors and sleep disruption impact the subjects' willingness and ability to engage with the interviewer, establish rapport, and engage in co-operation?**
- **How do circadian factors and sleep disruption impact the subjects' willingness and ability to generate accurate, coherent, abundant, verifiable, and actionable intelligence regarding pressing national security concerns?**
- **How do circadian factors and sleep disruption influence the effectiveness and diagnosticity of various evidence-presentation techniques (e.g., selective use of evidence)?**
- **How do such factors impact subjects' ability to engage in deception, to lie, or to fake emotional reactions?**

- How do such factors impact the diagnosticity of (scientifically-based) *cognitive* lie-detection methods which often rely on cues that are likely to be impacted by sleep (e.g., amount or coherence of information provided)?
- How do sleep factors impact the motivation and ability to engage in prolonged interview sessions that may produce extensive fatigue?
- How does the sleep-wake state of the intelligence officer (i.e., interviewer) impact his/her ability to elicit and evaluate HUMINT?

Pursuing these questions is critical for a proper deployment and evaluation of the most effective information gathering techniques. Answering these questions should yield actionable findings that can be relatively quickly used to improve collection, evaluation, and use of HUMINT in national security, but also other contexts (e.g., criminal investigations).

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