

TRAINING TO DEFEND: STRATEGIC MANAGEMENT SIMULATIONS

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Abstract: Terrorism is defined by a philosophy of revolutionary violence and a commitment to the destruction of government power. Of course, one way to reduce vulnerability to these impacts is heightened security. However, we must be a step ahead of terrorists: we must prevent their intended actions whenever possible. Most measures of decision-making competence focus on "content," i.e. on "what" decision makers know, on what their thought processes are, and on whether the decisions they make are correct. However complex, volatile, ambiguous task environments involving uncertainty and delayed feedback provide challenges and generate levels of stress, which interfere with appropriate decision making. A "correct" decision may not be easily available. Many well-trained individuals will be at a loss and may make errors (e.g., because they may select the most immediately evident, yet not the most appropriate options). The use of a well-validated methodology, Strategic Management Simulations (SMS) to assess and train decision makers is presented.

1. INTRODUCTION

Terrorism is defined by a philosophy of violence and a commitment to the destruction of government power. The effects of terrorism can vary significantly. They include loss of life (often of civilians), injuries, property damage and disruptions of services (such as water supply, electricity, public transportation and communications). One way to reduce vulnerability to the impact of terrorism is heightened security. To attain that security, we must be a step ahead of terrorists: we must anticipate, identify and prevent their intended actions whenever possible. To achieve that goal, we will need additional training in anti-terrorism and crisis management to improve the quality of human performance under these conditions. To achieve that goal, we must be able to measure emergency personnel's competency and we must be able to enhance that competency. Simulations provide optimal opportunities to utilize assessment and training in real world like task settings. Unfortunately,

simulations techniques that will enhance human effectiveness in response to terrorism, especially bioterrorism, have been rare. We must be concerned with selecting, adapting or developing simulation techniques that are optimally capable of assessing and training personnel that have to deal with terror. What kind of simulation techniques do we need?

Terrorism will remain a fluid, ever-changing threat, requiring innovative prevention and adaptive countermeasures. Terrorism must be confronted before it acts. An ideal module of assessment and training must craft a systemic, end-to-end approach that coordinates all of the means employed to combat terrorism, i.e., intelligence, the military, law enforcement, emergency responders, public awareness and international partnership. In other words, emergency preparedness for response personnel MUST include assessment and training in systems thinking which is dynamic and optimal for survival under threat. It must measure and train perceptual and decision making competence. But most of all, it must parallel the complex and uncertain challenges which terrorism presents. This paper discusses the SMS

simulation technology, an assessment and training technique, which incorporate all of these features.

2. STRATEGIC MANAGEMENT SIMULATIONS

2.1 Background

Most measures of decision-making competence focus on "content," i.e. on "what" decision makers know, what their thought processes are, and on whether the decisions they make are correct. Making the appropriate "correct" decision is, of course, of great importance. That ability can be learned and trained to optimize functioning in specific familiar situations, which repeat themselves over time, and situations. Terrorism, however, does not present repetitive challenges to which we can respond in a well-practiced fashion. Rather, it presents settings that have been described by the acronym "VUCAD:" Complex, Volatile, Ambiguous task environments involving Uncertainty and Delayed feedback provide challenges and generate levels of stress that can interfere with appropriate decision making. A "correct" decision may not be easily available. Many well-trained individuals who rely on well-learned responses will be at a loss and may make errors (e.g., because they may select the most immediately evident, yet not the most appropriate options). The SMS simulation is optimally suited to generate the experiences required to measure effectiveness in VUCAD settings. In addition, it has been developed into an effective training tool enhancing the competency of personnel to deal with VUCAD settings.

The SMS has been used to assess, predict and train decision-making competency in executives, defense personnel, health care workers and more. Twenty-five (validated) characteristics of human effectiveness in response to complex task settings and challenges are generated. Simulation measurement not only captures relatively simple task competencies (such as 'speed of response,' 'activity' and 'task orientation'). It focuses as well on intermediate task requirements (such as information acquisition) and collects information on the competency to utilize highly complex thought and action processes (such as emergency management, breadth of approach to problems, planning capacity and strategy). Success in the face of the challenges

generated by the threat of terrorism requires all of these competencies.

A major advantage of the SMS simulation is that it can tease out the exact competencies where any individual's or any team's proficiency is limited. Enhancing that competency within the one or few areas where limitations do exist is much more cost and time effective than the general training (or re-training) that is typically employed. A primary advantage of the SMS is just as important: we are using the simulation system itself to train individuals/teams that are likely to face the unusual and unanticipated events and challenges which terrorism presents - something which other (traditional) training modules cannot do.

2.2 Measurement via the SMS

The SMS simulations have been shown to be uniquely effective as assessment and training techniques where professional task requirements are multi-faceted and complex. The simulations were developed to provide multiple competency measurement in tasks and task situations that are potentially complex and volatile and in tasks that may contain ambiguity, some uncertainty, as well as possibly delayed feedback. The measurement system incorporates several subtle, sometimes hard to measure components of functioning, such as communication, team-work, utilization of knowledge, integration, as well as use of planning and strategy. The SMS simulations have been used in North America, Europe, Australia and Asia to assess and train decision makers (e.g., government and private industry executives, military officers, lawyers, medical professionals, and more). The wide applicability of the SMS technique is based on its generic applicability to multiple settings. It focuses upon "how" the person conceives of, utilizes, and applies the technical skills he or she has obtained. How an individual or a team applies their particular unique knowledge (for example, whether information is obtained, whether strategy is employed, and so forth) does not depend on the content of their profession or on the task at hand. Wherever task challenges are complex, measurement and training via the SMS applies: the simulation's universal approach to competence has been repeatedly demonstrated. For example, the simulation has provided extensive data (published in more than 300 scientific publications) in the fields of management, psychology, pharmacology, medicine, rehabilitation and other disciplines (e.g., Satish and Streufert, 1997, 1999).

2.3 Reliability and Validity

Measurement via the simulation technique provides both numeric and graphic (computer generated) information on an individual's or a team's (group's) competence across a range of responses to task demands. Numeric scores provide performance attributes on 25 validated performance indicators. High levels of predictive validity; reliability and applicability of the SMS simulations to real world settings have been repeatedly demonstrated across multiple professions (e.g., Streufert et al, 1988, Breuer and Streufert, 1996, Satish et al., 1998, Satish and Streufert, 1999). Validity data collected in various countries have demonstrated that the SMS simulation consistently predicts decision maker success across professional specialties, cultures and continents (predicting individual achievement and future success level on indicators such as "job level at age", "income at age", "promotions" and "number of persons supervised", etc.). Overall validity coefficients consistently exceed $r = +.62$. Reliability values range between $r = +.72$ and $+ .94$.

2.4 Procedure

The SMS simulations expose participants who are to be assessed or trained to one of several validated scenarios that are divided into several time periods. The scenarios approximate the complexities of a trainee's (e.g., security personnel) activity requirements, enabling accurate measurement of parameters at various time points. During the course of the scenario, the participant receives a series of preprogrammed items of information. Each simulation scenario sequentially presents a number of diverse situations and "assesses" a range of appropriate/optimal actions in the face of concurrent situations. The task setting is analogous to a security personnel's work, where he/she faces several challenges that require optimal and timely actions. The simulation provides opportunities for sequencing activities, for developing initiative, for planning and strategy development. In addition, the simulation contains a built in crisis period, much like what first responders might face in an emergency situation (e.g., New York/Madrid). At a particular time point in the simulation, a series of emergency events provide for the assessment and training of competence in dealing with emergency and stress management.

Simulation participants are able to make any number of decisions at any time they choose.

Personnel's decisions are then computer scored against the pre programmed time locked events in the simulation scenario, allowing measurement of various competencies such as initiative, planning, breadth of approach, strategy and more. Further, the technique of evaluating different personnel against the same pre programmed scenario allows valid comparison among the personnel and with reference to established norms

3 CONCLUSIONS

The SMS (Strategic Management Simulations) are concerned with the competency to deal with complex challenges. In other words, the simulation focuses upon the underlying capacity of individuals and teams to effectively interrelate both their existing knowledge and information processing competence with incoming information. It provides the opportunity to test competencies under conditions of complexity, uncertainty, ambiguity and situational change. Stated differently, the simulation can measure whether personnel can deal with complex real-world challenges that go beyond ordinary technical know how. Will an individual or a team consider more than a single antecedent to a problem? Will they discover and explore multiple options to problem solving? Will decisions be timely? Will earlier antecedents be considered, or is the focus only on the present? Will responses to a sudden unanticipated emergency be optimal? What about obtaining and utilizing available information optimally? Are initiative and creative strategic insights used to discover the plans and intents of terrorists? Can the team develop optimal strategies that thwart the actions of terrorists before they can strike?

Individuals/teams who would benefit from the SMS program participate in one-week training programs. At the beginning of the program, their specific competencies are assessed with one SMS simulation scenario. Training procedures following simulation assessment focus specifically on those areas where competency has not yet attained the needed level of excellence. In addition, training emphasizes communication, leadership and team spirit. The capacity to gain insights that would let team members anticipate potential intents and actions of terrorists are emphasized. The ability to deal with complex, volatile, uncertain and ambiguous task settings is trained. Effectiveness of training is measured by asking participants to perform in a second simulation at the end of the training period (using a different but parallel SMS scenario). Based on prior data generated through

the participation of professionals from several fields, we anticipate that SMS trained individuals and/or teams will be more effective in dealing with the threat of terrorism.

TABLE 1

SMS MEASUREMENT PARAMETERS

ACTIVITY LEVELS
 Basic activity level: number of actions taken
 Applied activity: opportunistic actions
 Focused activity: strategic actions in a narrow endeavor

SPEED
 Response speed: delay between information receipt and action

ORIENTATION LEVEL
 Task orientation: focus on concurrent task demands
 Contextual responsiveness: responses to immediate context

USE OF INITIATIVE
 Basic initiative: development of new (innovative) activities
 Independent applied activity: innovative goal directed activities
 Applied initiative: opportunistic innovations

INFORMATION USAGE
 Information orientation: openness to and search for information and consequent usage

EMERGENCY RESPONSES
 Emergency responsiveness: decisiveness during emergencies
 Response timing: rapidity of decisive emergency actions
 Strategic emergency optimization: use of strategy in handling a crisis
 Applied emergency optimization: optimal use of opportunities to handle a crisis

RECOVERY PATTERNS
 Basic recovery: return to a strategic mode after resolution of problem
 Sustained planning: capacity to continue to plan efficiently after crisis without breakdown

MULTI TASK FUNCTIONS
 Breadth of approach: flexibility in approach to the task
 Parallel processing: ability to multi task efficiently when required

PLANNING
 Planning distance: length of time over which plans extend
 Balanced planning: interrelating multiple plans toward strategy

Follow-through: capacity to appropriately change action plans upon changes in the situation

STRATEGY

Basic strategy: number of strategic actions

Planning-strategy balance: proportion of plans that are translated into strategic action.

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