

**RELATIONSHIP OF PERSONALITY TO
VIRTUAL COMMUNICATIONS EFFICACY
WITHIN A MILITARY COMBAT
ENVIRONMENT**

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Presentation Topic

Topic:

Quantitative study of the reason(s) particular individuals within combat virtual/computer-mediated-communications (CMC) environments reject and/or limit virtual system interaction.

Segue:

This study began as an investigative study that diverged into a study of Jungian aspects and impacts of established neuro-psychological structures (e.g. personality) on individual preferences while under extreme stress.

- A primary finding was in support of expectation violation theory**

Problem Statement

- The problem this study explored was what aspects of the individual using or rejecting CMC were possible causes of their actions while in combat environments.
 - Derived from previous work in WEI/WUV analysis for US/Soviet Conventional Reduction talks
 - Aspect of 'Atari-syndrome' along with personal experiences and studies in neuroplasticity
- The resulting study utilized discriminate factor analysis to examine the relationships that may exist between a soldier's personality type and their perceived ability to function effectively utilizing CMC systems while in a combat environment.

Support for Problem Statement

- **The comparative research performed identified a potential link between the personality traits of efficient and non-efficient soldiers operating in a combat virtual work environment**
- **The use of virtual teaming, so prolific in industry, is expanding into the U.S. Army with the advent of the C2 systems and linked networks and their reliance on the ability of the soldier to utilize these systems effectively; particularly when non-verbal cues are absent**
- **Networked C2 systems utilize extensive CMC structures in place of more traditional person-to-person command, leadership, and control interactions (Holloman, 2004)**
- **Existing studies demonstrate cultural and psychological effects associated with non-military virtual and interpersonal interactions (J. K. Burgoon et al., 2005; Campo, Cameron, Broussard, & Frazier, 2002; Kerr & Tindale, 2004; Wagner, 2002)**

Purpose Statement

As Adjusted from initial results of Literature and Preparatory Investigation/Analysis

- The purpose of this quantitative comparative research study was to examine if the personality traits of efficient and non-efficient soldiers operating in a combat virtual work environment and the traits or typologies of these Jungian structures exhibit any relationship to the participant's perception of efficacy in CMC modes during combat situations.

Significance of Study/Leadership

- **Leaders need to know what effects are present due to CMC in combat environments to properly present information for accuracy and understanding by the receiver, which is especially critical in situations where the leader and the subordinate are not in direct, visual contact (Miller & Shattuck (US Naval War College)).**
- **Research shows a definite degradation in accuracy and understanding the further two individuals are apart, as well as when they utilize electronic media (Caldwell & Everhart, 1998).**
- **This degradation in understanding can lead to a corresponding deficiency in the decision making process (Caldwell & Everhart/Miller and Shattuck).**

Hypotheses

- **H₀: There exists no recognizable effect of personality in perceived work efficiency from utilized CMC systems within a combat environment, nor can personality be a predictor of efficiency in a virtual environment.**
- **H₁: There exists an observable effect of personality in perceived work efficiency from utilized CMC systems within a combat environment; and personality can be a predictor of efficiency in a virtual environment.**

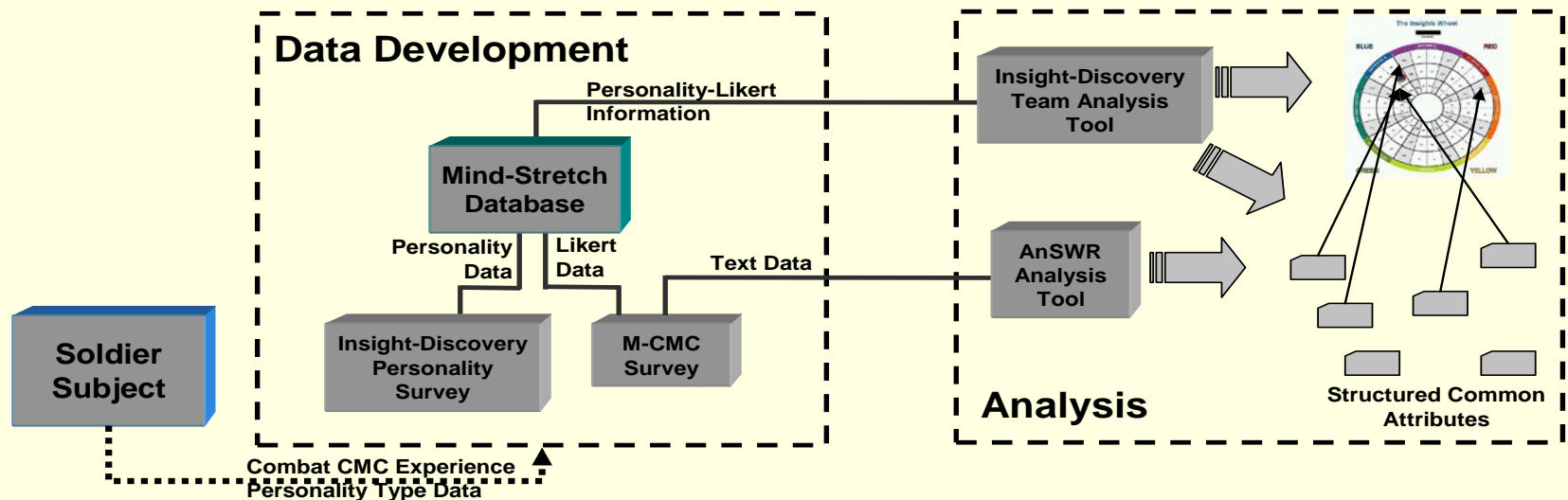
Research Questions

- **How is combat decision making altered by the information management and leadership processes involved in the determination of the appropriate level(s) and type(s) of information to process, pass, and include in the combat decision evaluation?**
This element could not be reliably researched due to level of participant involvement
- **Does Previous exposure to virtual environments, military training, or education have an impact?**
Demographics exhibited no significant influence possibly due to sample size and inability to interview all participants directly; typology indicated some potential especially during interview situations
- **What are the effects on individual cognitive processes where normal and expected stimuli are nonexistent?**
Data indicates support for need of non-verbal inputs by specific typologies. This may differ with further study into the specific typologies and/or experimentation in controlled conditions
- **How do the effects of expectation violation impact decision making?**
Data indicates possible influence of expectation violation effects, particularly during interviews
- **When advanced CMC is considered or determined as suspect, what is the impact on team trustworthiness?**
Team trustworthiness was not examined, however there are indications of trust issues with respect to individual capabilities in CMC environment from other studies of DoD
- **What results do the above effects have on the ability of decision makers to lead their organizations in the high-stress environment of combat?**
Could not be specifically examined due to subject availability; however, some indications exist that there is an effect (Recent NIE reports may also indicate this)

Methodology

Study Data Development and Analysis Process

- Soldiers with CMC/Combat experience are surveyed via internet
- Personality Data – Independent Variable
 - Education/Demographic Data – Independent Variable
 - Experiential Information with CMC – Dependent Variable
- Data obtained using single survey combining Insight-Discovery and Military-Computer Mediated Communications (M-CMC) surveys into one interface
- M-CMC gathers demographic and experiential data as to the subject's CMC activities/experiences in combat
- Personality/Likert data stored in Mind-Stretch, Inc. (Insight-Discovery Company) servers and fed to the IDTA Tool for base analysis and display as 'Insights Wheel'
- Textual information fed to Analysis Software for Word-based Records (AnSWR) and codified based on commonalities such as recurring themes, etc.
- Codified information compared to personality and demographic elements



Relevant/Important Research on Topic

- **Human communications development theory (Allot, M. Burgoon. Arizona State University)**
- **Social/Environmental interaction theories with focus on expectation violation theory (J.K. Burgoon, et. al., Arizona State University)**
- **Neuroplasticity theory and construct of neuro-pathways (Schwartz (UCLA Dept of Neurological Studies))**
- **Personality type theory (Jung)**
- **Personality impacts/effects in DoD Managers (Claxton)**
- **Virtual Team Efficacy (Wagner, Walters)**

Study Population and Criteria

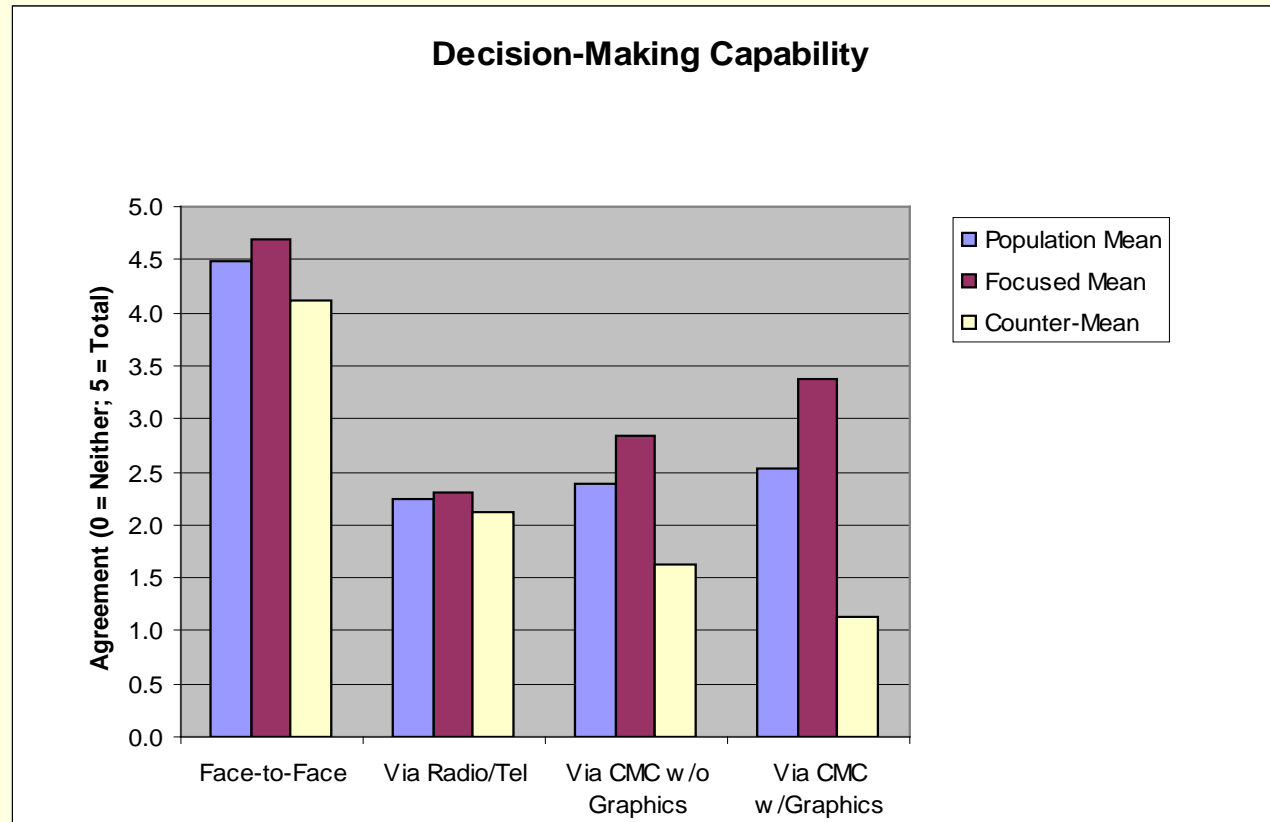
- **Military decision-makers in Brigade level command and staff positions**
 - **100 survey requests**
 - **34 responses**
 - **23 usable**
 - **11 included personality survey data and interviews conducted by survey team**
- **Were involved in electronic communications activities as primary means of combat information development, dissemination, and subsequent decision-making**

Analysis

- **Trend identified two specific groups**
 - **Focused Mean: Single set of individuals scoring perceived efficacy in CMC environment on an increasing scale**
 - **Counter-Focus Mean: Single set of individuals scoring perceived efficacy in CMC environment in decreasing scale**
- **Scale (Likert) measured efficacy in four domains:**
 - **Face-to-face communications**
 - **Telephonic/Radio communications only**
 - **Minimal CMC (e.g. email, chat, some voice)**
 - **Full CMC (e.g. interactive audio/visual; graphic depiction; shared streaming content, etc.)**
- **Specific differences indicated in:**
 - **Decision making**
 - **Communicating critical information (both to and from others)**
 - **Communicating complex data/concepts (primarily to others)**

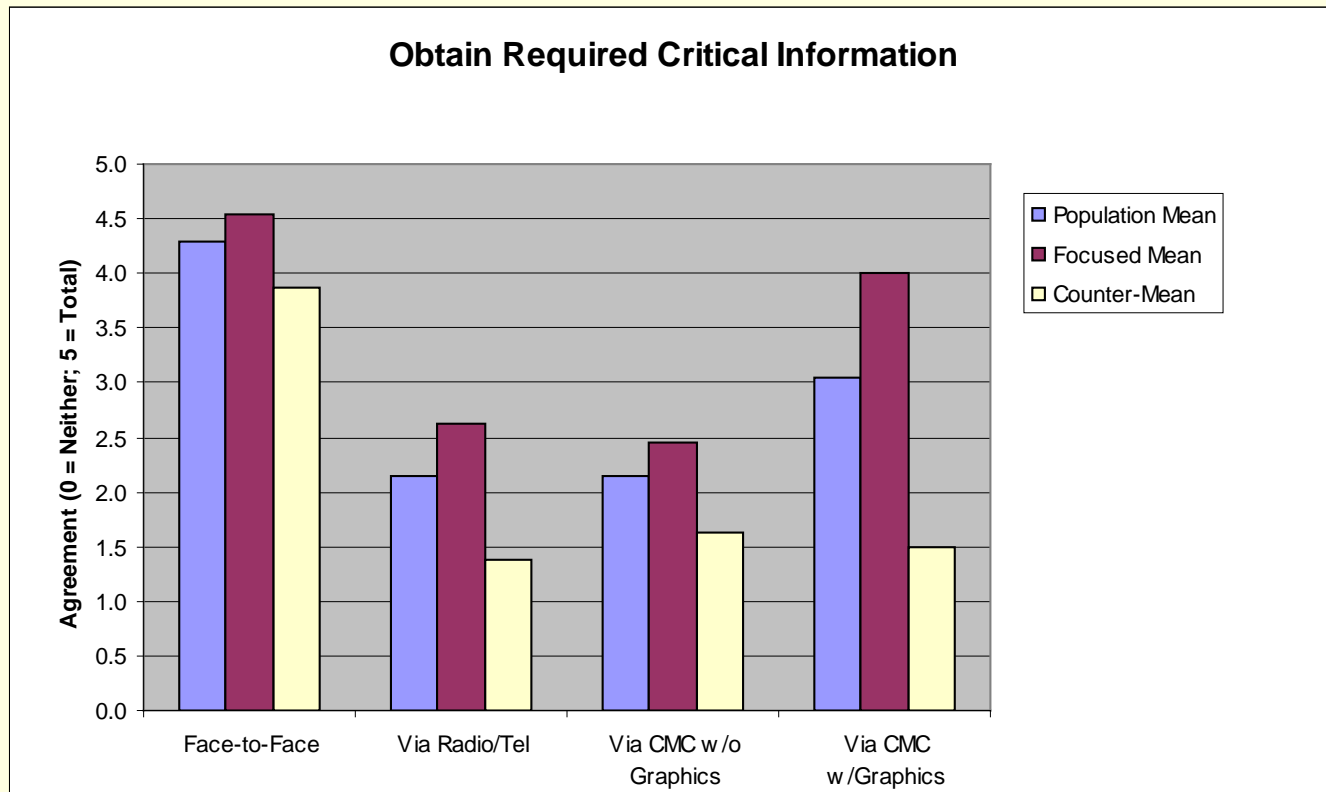
Research Question 1: Decision Making

- Value of face-to-face undisputed
- Visual break between two specific groups of respondents



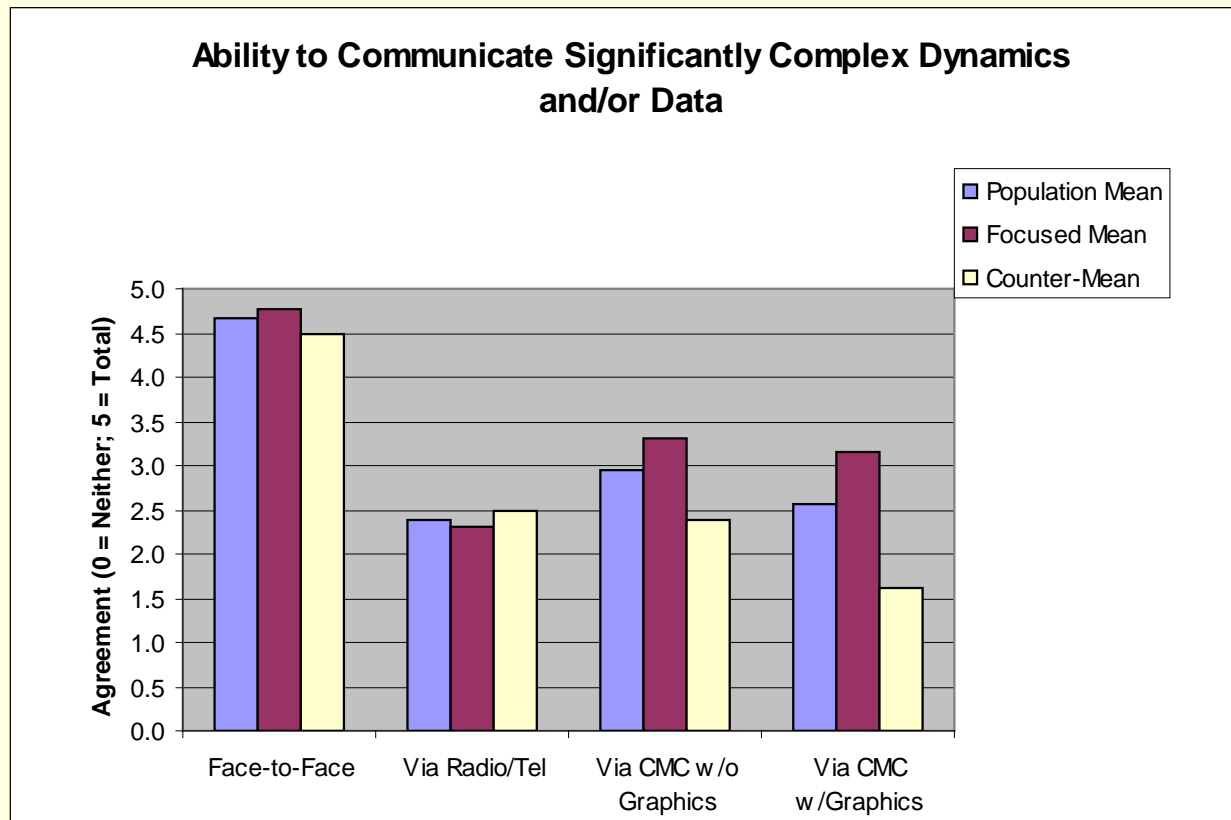
Decision Critical Information

- **Second visual break in one group's ability to derive decision-critical information from sources**
- **Respondents are in the same grouping as the previous slide**



Communicating Complex Data

- Based in self-perception of other's understanding
- Was not verified with discussions/survey of target audience (unavailable)



Conclusion of Data

- Groups demonstrated measurable difference in typology strength rather than base typology
- Sufficient data exists to support that there exists a difference in effect of personality in perceived decision-making efficacy and
 - This effect is significant enough to suggest further study and controlled experimentation
 - Individual personality type may be a predictor of efficacy in a virtual environment
 - Experimentation may indicate training and TTP opportunities to limit potential expectation violation impacts

Limitations/Delimitations

Only individuals in critical decision making positions within military operations in Bosnia, Afghanistan, Somalia, and Iraq

Period of service between 1996 and 2006

Only individuals who utilized CMC systems during this period

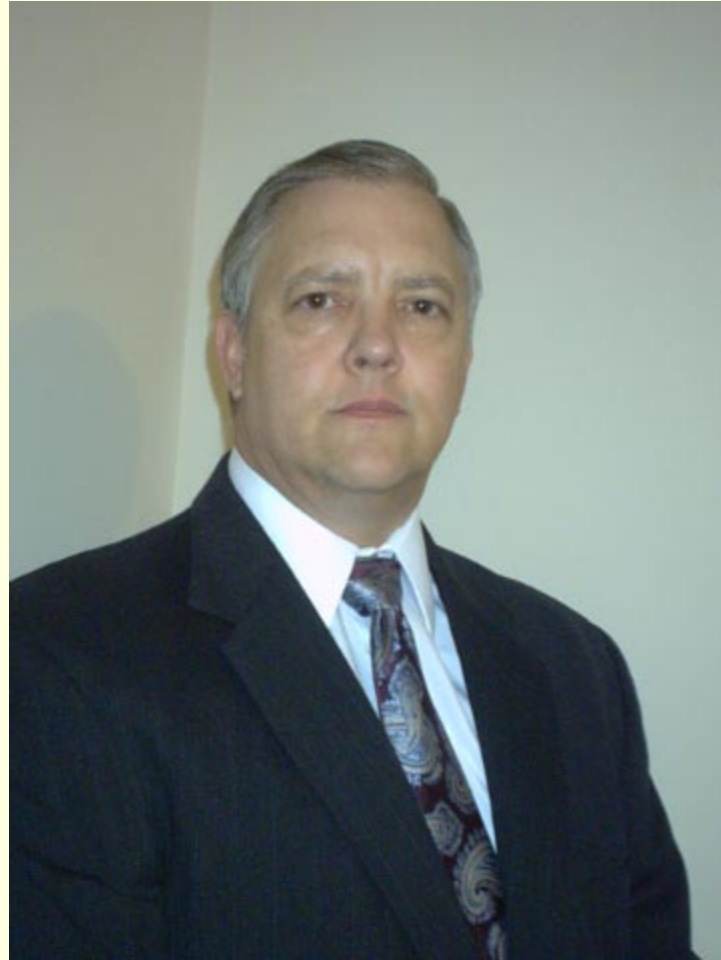
Population responses limited to 23 of which 11 completed personality survey

Did not example correctness or efficacy of decisions made; only perceived efficacy of communications processes

Recommendations

Expanded US Army sponsored study of both personality typology issues and decision efficacy in controlled experiment

Questions?



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