

# **HITL and Metacognition : Self Analysis and Leadership Enhancement During Simulations**

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**ABSTRACT:** *A key factor in effective leadership is a high degree of metacognition, or awareness of the processes of one's own thinking and the factors and conditions that influence it. This understanding of cognitive filters is critical in rapidly internalizing and effectively achieving and using situation awareness. This paper presents historical anecdotes supporting this assertion. It then goes on to describe Human-In-The- Loop (HITL) experiences at the Joint Forces Command's Joint Concept Development and Experimentation Directorate. It discusses the insights from these experiments, analyzes the metacognitive schema in which the participants are immersed, presents the design of an instrument to investigate those issues, and analyzes preliminary data. This work is compared to other leadership training, both within and outside of the DoD. The authors review the literature supporting the impact of metacognition on leadership and survey previous efforts to incorporate this approach into formal and informal educational settings. This analysis includes a critical review of efficacy of these approaches and considers the future of such programmatic implementations. The authors' experience with live leadership training and with leadership growth during large-scale battlefield simulation experiments is set forth, compared and characterized to help explicate the issues and the opportunities. They relate successes in the intentional development of metacognitive strategies in developing leaders, and demonstrate how the HITL experience is especially effective in this process. The DoD trainer will be provided with both the theoretical underpinnings of this discipline and a pragmatic series of questions that can be posed when evaluating their own situation and needs. The paper concludes with a supportable view of the future requirements and desirable goals of the DoD for continued research into this area of vital interest.*