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Joint Federal Research Funding for Military Personnel and Veterans

Project Report Summary Template

Funding Opportunity
Environmental Scan and Evaluation of Key Attributes of Training Scenarios Involving Moral Ethical Dilemmas for Military Personnel
Brief Overview
This project explored how immersive technologies—specifically Extended Reality (XR)—can enhance training for moral-ethical decision-making (MEDM) in military contexts. The research synthesized interdisciplinary evidence and provided actionable guidance on how XR platforms can realistically simulate operational stressors and complex ethical dilemmas to support ethical training, resilience, and readiness.
What is this Research About? Military personnel regularly face morally complex and high-stakes decisions that impact mission success, civilian safety, and psychological wellbeing. Traditional classroom-based ethical training does not adequately prepare personnel for the intense stress and ambiguity of real-world operations. This research investigated how XR, including virtual, augmented, and mixed reality, could improve MEDM training by creating immersive, dynamic, and realistic environments that better reflect operational conditions.
What did the Research Do? The research team conducted a comprehensive narrative review of MEDM theory, military ethical challenges, and the application of XR technologies in training. The work involved: • Mapping theoretical frameworks of MEDM, including rationalist and intuitionist models. • Identifying individual, situational, and organizational factors influencing ethical decisions. • Evaluating existing XR-based training systems across military and high-pressure civilian domains. • Outlining benefits, challenges, and future directions for XR-enhanced military MEDM training. • Proposing an implementation framework to integrate XR into military training programs.
What did the Research Find? The research found that MEDM in military contexts is shaped by a complex interplay of individual, situational, and organizational factors. Under stress, individuals tend to rely more on intuitive judgments than deliberate reasoning, making traditional classroom-based ethical training insufficient for operational environments. XR technologies offer significant advantages by simulating realistic, emotionally charged, and high-pressure scenarios that mirror the conditions under which military personnel make ethical decisions. XR-based training enhances immersion, presence, and emotional engagement, all of which are critical to replicating the cognitive and emotional demands of real-world decision-making. The research also highlighted that XR enables adaptive and data-driven training, which can be tailored to individual traits and learning needs. While the potential benefits are substantial, challenges remain, including technical limitations, the need for ethical safeguards, and a

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lack of rigorous validation studies. To address these gaps, the report proposed a phased implementation model involving scenario development, pilot testing, stakeholder feedback, and ongoing evaluation to ensure effective integration of XR into military MEDM training programs.

What does this Research Mean?

XR offers a promising supplement to traditional ethical training by improving the realism and relevance of MEDM practice for military personnel. These technologies can simulate morally complex situations under stress, helping trainees internalize ethical principles and build the confidence to act appropriately under pressure. For optimal impact, XR should be integrated into broader institutional frameworks of ethics, leadership, and mental health support. Continued research, validation, and interdisciplinary collaboration will be key to successful implementation.

Sources

Birch, M., Forchuk, C., Ein, N., Hadaschik, J., Nazarov, A., Richardson, JD., Van Rassel, A., Younger, W. (2025). Environmental Scan and Evaluation of Key Attributes of Training Scenarios Involving Moral Ethical Dilemmas for Military Personnel. DRDC Publications. DRDC-RDDC-2025-C102. CAN UNCLASSIFIED.

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