

Individual Behavioral Response to Directed Energy Non-Lethal Weapons: Conceptualizing Future Research

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The success of a nonlethal device depends upon the ability of the device to deliver a payload which produces the desired human effect, physiological, or behavioral, or both. Further, that effect must support an operational requirement. In short, the device must work and it must serve a purpose. It is difficult to design successful directed energy nonlethal weapons because 1) psychological effects of nonlethal weapons are more subtle and variable than traditional munitions and 2) psychological effects research for nonlethal weapons is still in its infancy. In response to these challenges, the US Air Force Research Laboratory has initiated a research effort to directly assess behavioral responses to directed energy nonlethal weapons (DE NLWs). Moreover, this effort strives to identify very specific quantifiable behaviors, which if induced through DE NLWs, are implicated in increased mission success for specific operational scenarios. In this manner, AFRL is not just determining that nonlethal weapons are effective, but that they are effective towards desired operational outcomes. The program has both a theoretical and applied track. The theoretical track blends known human experimental research in avoidance behavior and motivation with decision-making to develop a causal model for predicting individual response to nonlethal weapons. Through computational modeling, the applied track seeks to quantify correlational relationships between nonlethal weapon use and individual behavior. Computational approaches under consideration include Bayesian models, neural networks, and traditional linear and logarithmic models. Development of predictive behavioral models in response to nonlethal weapons use will directly support operational deployment decisions of current nonlethal weapons, and provide theoretical and empirical support for behavioral effects-based design of future nonlethal weapons.

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